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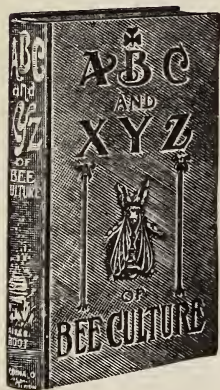
Cleanings in Bee Culture

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VOL. XLI. SEPT. 1, 1913, NO. 17.

The A B C and X Y Z of Bee Culture....



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Gleanings in Bee Culture

A semi-monthly magazine of 56 to 80 pages;
authoritatively edited and printed in finest
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The New Edition of Our A B C and X Y Z of Bee Culture

The new edition of the A B C and X Y Z of Bee Culture contains 750 pages, or 150 more than the former one. On account of rewriting so many of the old articles, and the incorporation of many new ones, making the book so much larger than formerly, we are now obliged to charge \$2.00 instead of \$1.50; but we believe that the reader will acknowledge that it is cheap, even at that price. Approximately it contains nearly 600,000 words. Any volume of this size on a technical subject like beekeeping would ordinarily command a price of \$5.00.

The new edition has been most thoroughly revised by E. R. Root, ably assisted by Dr. C. C. Miller, of Marengo, Ill., the veteran comb-honey producer; by Arthur C. Miller, of Providence, R. I., banker and beekeeper; by John H. Lovell, of Waldo, Me., naturalist, botanist, and entomologist; and by Prof. Eugene G. Baldwin, the one who wrote that interesting series of articles on Florida beekeeping a year ago.

Up to now the old editions have been printed on standing type; but the extensive additions and revisions made it necessary to discard the old type which was becoming worn, and adopt a new scheme for getting out this work.

The fact that the new edition was to be entirely reset, from beginning to end, made it possible to make the revision much more thoroughly than had ever been undertaken before. In many cases, instead of patching new matter on to the old it seemed more practicable to rewrite the articles entire. A notable example of this will be found in the case of foul brood. The former edition contained six pages, while the new has sixteen.

A notable feature of this last edition is the bee botany, which was entirely overhauled, and in many cases entirely rewritten, by John H. Lovell and Prof. E. G. Baldwin, mentioned above. The subject of Pollen and the Pollination of Flowers was almost entirely rewritten by Mr. Lovell. We doubt if there is another man in the country who can handle these

subjects more ably than he. Dr. C. C. Miller to a great extent rewrote "Honeycomb." He also made important suggestions (which were adopted) on the subject of comb-honey production; and well he might, for he is now regarded as one of our best if not the best authority on the production of honey in sections. Mr. Arthur C. Miller, who for so many years made a close study of the internal economy of the hive, made numerous suggestions, many of which were adopted and incorporated in the text. In other cases, where he might or might not have differed with the author and reviser, his notes were put in the form of footnotes at the bottom of the page, and signed "A. C. M." In a similar way will be found an occasional footnote signed C. C. M. (Dr. Miller). The unsigned footnotes are by the author.

Some of the best things that A. I. Root ever wrote on bees (and he wrote a good many) still appear in this volume, and always will. It is not so much because his writings have been stricken out of this edition, but because the immense amount of new stuff made necessary by the growth of the industry has made A. I. R.'s material seem small in comparison. His familiar style will be recognized, for example, in Absconding Swarms; After-swarms; Anger of Bees; Artificial Heat; Artificial Pasturage; Bee-hunting; Bee-moth; Italian Bees; Queens; Robbing; Stings. What he has written under these heads will always remain as classic in bee culture. No man had more enthusiasm in the study of bees than A. I. Root, and that enthusiasm is so conspicuous that his writings can usually be picked out of the other matter, even though they have been skillfully interwoven with matter written by others.

Taking every thing into consideration, we feel proud of our new A B C and X Y Z of Bee Culture. It is new from cover to cover. It is the work of experts in their respective lines. It is the largest and most comprehensive bee-book in any language in the world; and yet it is sold at the popular price of only \$2.00.

Cleanings in Bee Culture

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VOL. XVI.

SEPTEMBER 1, 1913.

NO. 17

Editorial

THE COVER PICTURE.

The front cover of this issue shows in the background our Ault sidehill apiary where Inspector Morris made the remark that he would have to saw off one of his legs and splice it on to the other in order to inspect the bees. The sidehill is so steep that the cattle can not go up it if they would. The yard faces the south; and during cool or chilly days these bees will gather nectar or pollen when there is little or nothing doing at the other yards. The picture was taken with a Telephoto lens a considerable distance away.

ARRANGING DATES OF CONVENTIONS SO THEY WILL NOT CONFLICT.

In our last issue, page 558, in the editorial department, we suggested that the National Beekeepers' Association make some arrangement whereby the time of holding the various State and local conventions could be arranged on consecutive dates to enable certain prominent beekeepers to attend one or more of these meetings. We sent a proof of this editorial to Dr. Gates, and received his reply too late to be incorporated with the editorial above mentioned.

Dear Mr. Root:—I have just received the proof of your editorial concerning circuit conventions. It is excellent. I presume you were not present when a similar scheme was proposed at Cincinnati. I brought up the question of a series of meetings on consecutive dates in different quarters of the country under the auspices of the National. It seems to me this should be one of its chief functions. I recall Mr. Dadant's remarks in reply to what I said, but the time was not opportune to take action.

In Massachusetts, where monthly meetings are held, it could be well arranged to have one of these under the auspices of the National. I think this would be quite agreeable to the local societies. In fact, I am now planning a circuit of local meetings under the auspices of the State Beekeepers' Association with which the local associations are affiliated.

I am taking opportunity to present to the Directors your suggestion for their consideration as soon as it shall have appeared. Have you any details as to the machinery I could utilize?

Amherst, Mass., July 28.

B. N. GATES.

If the secretaries of the various State and local associations will correspond with Dr. Gates we feel satisfied that the scheme of dating could be arranged so that Dr.

Phillips, for example, of the Bureau of Entomology, could attend several important meetings instead of one or two as in the past. By the way, Dr. Phillips did not make this suggestion, but we believe that many of our States would be able to secure his attendance if the dates were made consecutive.

THE APICULTURAL EXHIBIT SHOWN AT THE AGRICULTURAL COLLEGE AT AMHERST, MASS.

On page 434, of July 1st issue, in giving our report of the State convention of Massachusetts beekeepers at Amherst we referred to some very interesting exhibits that were prepared by Dr. Burton N. Gates and his students at the apicultural school. These exhibits were placed in one of the large rooms, and comprised a large list of beekeepers' supplies from several manufacturers, various apicultural novelties, old relics of bygone days, and bees and honey in various forms. This was one of the most instructive and elaborate exhibits of bee supplies and bee products that was ever given in the United States. The hope is that Dr. Gates may arrange to have a similar exhibit for the National convention the coming fall or winter.

Elsewhere in this issue we have given several views showing the exhibits as they were shown at Amherst. The only regret is that thousands instead of hundreds of beekeepers could not have seen it. As it is, we are trying to show it to thousands on paper. See pages 607, 608, and 609 this issue.

THE PREVENTION OF SWARMING IN THE PRODUCTION OF COMB HONEY; HOW IT CAN BE REDUCED TO TWO OR THREE PER CENT WITH REGULAR STANDARD HIVES.

A YEAR or so ago we illustrated Mr. Vernon Burt's scheme for the prevention of swarming when running for comb honey. At that time Mr. Burt was very much pleased, saying that he believed it would solve the swarming problem for him. The plan is, in brief, nothing more nor less than putting four $\frac{7}{8}$ -in. blocks under each corner,

between the brood-nest and bottom. This gives an entrance $\frac{7}{8}$ inch deep on two sides and the back end and in front, enlarging the entrance about $\frac{7}{8}$ inch more. You will find this plan illustrated and described in our A B C and X Y Z; and in this issue, page 610. Said Mr. Burt: "I do not have over two or three per cent of swarms; and, what is more, I do not even stop to cut out the cells. Yes, it does away with the nuisance of cell-cutting, and what few swarms I get can be easily handled."

Inspector Morris was along. Said he, "Mr. Root, that plan looks mighty good to me. If I know myself I shall be using it next season."

We have found Mr. Burt to be almost unerring in his opinions. He is slow to come to a conclusion; but when he does he is nearly always right.

It has been stated by authorities that swarming comes as a result of overcrowding, particularly of overheating the brood. The remedy, obviously, may be applied in one of two ways—reducing the force of bees by swarming or dividing; or, second, cooling off the brood-chamber by ventilation. This may be accomplished by the method illustrated on page 610 of this issue, or by the use of slatted dividers, *a la* Aspinwall. Whether the four-entrance scheme is as good as the Aspinwall we are not prepared to say. But certain it is, that Mr. Burt says he can eliminate all but two per cent by the simple expedient of raising the hive up on four blocks. Nothing else is needed—not even cell-cutting.

Others have advocated the plan, and have spoken highly in its praise. It is worth thinking about, brethren; and it is worth giving a thorough trial next summer.

The four little blocks would cost less than a cent, and the time taken to apply them not over a cent. Good investment! especially when it sometimes costs all a swarm is worth to get it out of a tree, sometimes, to say nothing about the loss of honey due to the loafing period just preceding swarming.

TWO VIRGINS LIVING PEACEABLY IN THE SAME HIVE.

We have just run across a case of two virgins in the same hive. The history of the case is as follows: On July 31 we introduced a ripe cell in a protector to a three-frame nucleus, which we supposed was queenless. The combs contained some sealed brood, but no unsealed brood. The cell was due to hatch the next day, August 1.

On August 8, in looking over the combs in this nucleus Mr. Marchant found this

virgin; and then, as he was about to place the comb back in the hive, to his astonishment he found another running about on the same comb and on the same side of the comb. The two virgins showed no tendency to fight, and all was peaceable.

Desiring to watch the outcome, Mr. Marchant looked over these combs each day. On Monday, August 11, he saw both virgins as usual early in the morning. About 10 o'clock, looking over the combs again, he could find but one of them at first, but finally located the other on the bottom-board, dead. Two hours before, both virgins had been running over the combs as unconcernedly as usual.

There are three possible explanations: First, the nucleus, by some oversight, may have already had a virgin on July 31, when the cell was first introduced. The old virgin already in the hive, possibly because of some injury to the wings, had never mated, and was allowed to live, even with another virgin in the hive, until August 11, when the second virgin showed signs of having been mated, although she was not as yet laying.

Second, a young virgin returning from her flight from some other hive may have gotten into this hive by mistake. As she did not show signs of having been mated, her trip, if this supposition were correct, was evidently not a successful one.

Third, by an oversight there might have been a ripe cell in the hive at the time the second cell was introduced July 31. A cell from which a virgin had recently emerged on the opposite side of the comb seems to give weight to this theory. Unless by some mistake this cell in question, which the nucleus already had, had been put in just a day or two previous, the bees must have carried an egg from some other hive into the hive in question, for there had been no unsealed brood in these combs for some time.

The true explanation, we shall probably never know; but the fact remains that there were two virgins in the same hive for two or three days.

INTRODUCING OLD VIRGINS BY THE SMOKE PLAN; A SEVERE TEST.

THE direct method of introducing with smoke according to the Arthur C. Miller plan as given in the June 1st issue, p. 370, was given a most severe test in one of our yards recently. Our Mr. Marchant had twenty-three virgins, which, according to his records, were six days old. They were so old, in fact, that they would fly from the

cage, some of them actually doing so, being caught in the air, and some too old to be readily accepted by the ordinary methods of introducing. These were introduced by the use of smoke, and in fifteen minutes the grass was removed from the entrances as has been described. Out of the twenty-three virgins, twenty-three were safely introduced. The fact that the queens were virgins, and *old virgins* at that, makes the test all the more severe. Twenty-one out of the twenty-three virgins have been checked up laying. These virgins evidently went out to mate the day after being introduced. They were checked up laying six days after being introduced.

The advantage of the plan is in the saving of time and the elimination of the mailing-cage—always a source of danger from disease. In the case of laying queens introduced by that method we have had them laying in a few hours. Those same queens, if introduced by the cage plan, could not have been laying under 48 hours at least.

Mr. Marchant believes that there is one drawback in the plan; and that is in case of, say, a four-frame nucleus in a full-size hive. The great amount of space outside the division-board furnishes a retreating-place for the virgin if she is scared; and when the hive clears of smoke the bees may ball the virgin if she is sneaking around in one of the remote corners of the empty space. In a hive no larger than an ordinary nucleus, so that the virgin must keep between the combs, there is little chance for failure.

Mr. Marchant says that he and his father have used the plan enough in the South in years past so that he can absolutely guarantee that the young queen is not injured by the smoke. If a queen is rolled in honey, and then allowed to run in to be cleaned off by the bees, she has a sleek greasy appearance like an old queen, owing to the fact that she has been literally licked by the bees. Mr. Marchant thinks that nine queens out of ten so introduced are likely to be superseded in the fall.

It might be well to suggest caution in the use of the smoke method. Don't overdo it. Too much smoke may permanently injure the bees and the queen.

WATER FOR BEES IN MAILING-CAGES AND FOR SHIPMENT BY EXPRESS; A BIG STRIDE IN ADVANCE.

OUR readers will remember that late last summer we made the discovery that bees could not be shipped without combs during hot weather unless they were supplied with water. When this was done the pound

packages of bees would go through with the loss of hardly a single bee. This year we continued our experiments, and later on will publish some hundred reports showing how we have sent bees from coast to coast, from Maine to British Columbia, to extreme points in the South, with the loss of only about a dozen bees in three-pound packages. We recently shipped some 20 lbs. of bees to British Columbia, with the loss of only a few dozen bees. When it is remembered that there are about 4500 bees to the pound, and that the entire shipment aggregated 135,000 bees, the ratio of loss is practically *nil*.

In some shipments of pound packages the water-bottles broke; and in other instances, where the supply of water gave out before arrival the bees either arrived all dead or with only a few survivors. The use of water in the shipment of bees by express without combs has been so satisfactory that we have been reviving the idea of using the small water-bottle in mailing-cages for queen-bees. Some of our older subscribers will remember how over thirty years ago A. I. Root was enthusiastic over the result of his experiments in giving bees water in the mailing-cages. We asked him to look up his early article on the subject, and in *Our Homes* for this issue is a reproduction of it.

We have just begun the use of water in mailing-cages for long distances. If it is good for long express shipments, why should it not be equally satisfactory for a few bees sent by mail?

Very recently we have been putting some homeopathic glass vials, containing water, over cages of bees in our office. The bottles were first filled with water, after which a small slit was made in the side of the cork, when it was pushed down level with the top of the bottle. This bottle was then inverted over the wire cloth of an ordinary mailing-cage of bees. The bees were thus enabled to run their tongues up in the slit in the cork and drink to their fill. We found that an ordinary cage of bees would use up a little vial of water (about a tablespoonful) every two weeks. So far we have been able to keep bees thus watered for a whole month, and at this writing they are as lively as when we first put them up. We have recently perfected a little tin box for holding water in a mailing-cage. This box is circular, and just neatly fills one of the candy holes. In the center is a small perforation through which bees can drink. While we would not advocate the use of water for *short* distances, yet for *long* distances we believe it will save the lives of a good many hundreds and even thousands of queens.

We have determined one fact; and that is, that a comparatively dry candy may be used providing the bees can have access to water. When no water is supplied it is imperative that the candy be soft and moist. If too moist it will dissolve and daub the bees; if too dry they will starve within a few hours. To make a candy just right is a fine art. If we can arrange to give the bees water while *en route* by mail, the softness or hardness of the candy would be of no material consequence. Indeed, we now believe we can use a dry hard candy. Details and engravings will be given later.

The question may be raised, "If the use of water proved to be so successful with A. I. Root thirty years ago, why did he abandon it?" First, his scheme of giving water was imperfect. Sometimes the water would be fed too fast, wet the candy, and kill the bees. Later on, Mr. I. R. Good solved the problem of bee food for mailing-cages, as he thought, by making a soft candy, mixing sugar and honey into a stiff dough. This looked so good that A. I. Root dropped his water-bottle scheme and adopted the candy. This food proved to be so satisfactory that its use has continued up even to the present time; and the only substitute that has been offered is a "fondant," such as candy-makers use in some kinds of candy. But with many of these candies, it is well known that a large percentage of bees and queens by mail will die if confined more than ten days; so it is apparent that something is to be gained if we can devise some scheme that will supply bees water in the mails, not too fast, but just fast enough to give them food and drink. In the mean time, A. I. Root's article in the *Home* papers in this issue, written 35 years ago, will be read with interest. More anon.

THE HONEY-CROP REPORTS.

THERE is but very little to add to our honey-crop report as given on page 560, last issue, except to say that the drouth has been excessive in certain portions of the country. This may kill out the clover for next year; if so it will have a tendency to steady prices for this year. See what our Canadian correspondent has to say in this issue. In some parts of the West the newspapers have reported excessive drouth, but late rains have relieved the situation. Mr. Wesley Foster writes:

Colorado was very generally visited with rain during the third week of July. At Boulder we had almost too much rain. Delta, Montrose, and Montezuma counties in the western part of the State were not so blessed with moisture, and their August flow would have been better had they had several rains

or one real good one, but the bees were working quite satisfactorily Aug. 1st. Aug. 6th one of my colonies in Montezuma County was building comb in the cover up through four supers. August and part of September, if not all, can be counted upon to furnish honey in the Montezuma valley while we can expect little after Aug. 15th in Northern Colorado. Aug. 1st my bees in the Montezuma valley were supered, on the average, two supers to the hive, so that I expect a fair crop from them.

Frank Rauchfuss, of the Colorado Honey-producers' Association, sends a night-letter telegram as follows:

Since our last report weather conditions and honey-flow have been good in most of the producing sections of the State. Season about over now. Crop as a whole is better in quality and quantity than last year.

THE COLORADO HONEY-PRODUCERS' ASSOCIATION,
Denver, Colo., Aug. 24. F. RAUCHFUSS, Mgr.

There has been no severe drouth in this section of Ohio, and we may say this for the whole State. It was beginning to be a little dry when we had a copious rain on the 21st, and this morning, the 22d. The ground is soaked, and the roads are muddy.

We have received a great many honey reports, but are unable to publish all of them; but here are a few of them that have been taken at random—good, bad, and indifferent. Most of them, however, are good. These reports may enable some of the beekeepers of the country to dispose of their crops.

Things were looking pretty good until the rains ceased, though we are yet hopeful of the cotton flow and what comes from late bloom.

J. H. AND J. T. CLARK.

Munford, Ala., C., July 21.

No honey this season in this part of the county. Escondido, Cal., S. W., July 9. J. A. NELSON.

This locality is a total failure—no surplus. Many beekeepers will have to feed to carry them over to another season. We had only five inches of rainfall last winter in the southwest part of San Diego Co. Otay, Cal., S. W., July 12. W. A. BALES.

This county (Tuolumne) will have less than half a crop of honey; 60 lbs. per colony for bees well cared for in 12-frame hives is about what I am getting in a good season. It is close to 20 gallons for like colonies. P. D. HEROLD.

Lonora, Cal., C., July 4.

My apiaries are enjoying a fine flow of nectar.

THOS. J. STANLEY.

Manzanola, Colo., S. E., June 19.

The indications are that we shall have a fair crop of honey. HARVEY SAID.

Pueblo, Colo., C., July 29.

This is one of the best years we have had for honey since I have been in the business—something unusual for this section on white clover.

HENRY HARRISON.

Torrington, Conn., N. W., July 3.

Prospects are good at present for a fine crop in this vicinity. The flow is just commencing, June 20. Bees are weak on account of light stores, long winter, and cold spring. H. L. BRATY.

Heyburn, Ida., S. C., June 22.

Fair crop of white clover. A. M. KECK.
Odon, Ind., S. W., June 24.

Replying to your request, I will report the clover-honey flow is very good, and the end is not yet. The never failing basswood is on in full blast, but the bees are staying with white clover, just as if they were getting paid for it. Nearly all beemen here have the old granddad boxes, and are not getting any honey. PERRY FRANKLIN.

Newcastle, Ind., E. C., July 11.

The white-clover honey-flow is light; alsike is some better, but our crop is rather short up to date.

MOSES C. MORGAN.

Blue Mound, Ill., C., June 27.

The honey crop is about one-third of the usual amount. Quality is good. It will not be over half a crop at best. H. W. DOERR.

Beardstown, Ill., W. C., July 10.

There is a fine flow from clover, and I expect a large crop. R. B. RICE.

Mt. Carroll, Ill., N. W., July 16.

This is the best season we have had for many years—a fine yield from both white and sweet clover. Hoopston, Ill., E. C., July 21. G. T. WELLIS.

White clover is plentiful, but nectar is scarce. It will not be over half a crop of comb honey.

Brooklyn, Ia., S. W., July 7. B. H. TRIPP.

White clover is a good crop; basswood one-third.

H. R. BROWN.

Cedar Falls, Iowa, N. E., July 14.

Bees are doing finely on white clover; big crop of honey from them in this locality.

Atlantic, Ia., S. W., July 8. JOHN DUFFORD.

Honey crop is short. It seemed we were to have a good flow, but for some reason it was cut short. There is a small promise for a fall flow.

Center Point, Ia., N. C. GEO. W. FREY.

The honey-flow through June was good; about 75 lbs. per colony; but it ended July 1, two weeks sooner than usual. July was very dry. Weather bureau reports July the driest on record. Prospect is poor for a fall flow; for that reason we shall not dare extract too closely; must leave plenty for winter stores.

Dixon, Iowa, Aug. 2. E. A. DONBY.

The heaviest flow of white-clover honey is now on that was ever known in this vicinity; but as the bees were about all killed off in the three abnormal years just past, the bulk of the crop is going to waste. I had one standard ten-frame Langstroth hive filled and partly sealed in six days last week. The rest of my colonies are doing nearly as well. Symptoms are favorable for a flow from basswood this season. DR. A. F. BONNEY.

Buck Grove, Iowa, W. C., June 24.

Bad drouth here. White clover is cut short; no rain from April to June 30; feeding my bees now. Kevil, Ky., S. W., July 8. J. G. VANCE.

The clover flow in this immediate section was cut short, being confined to about two weeks; but bees got about 100 lbs. to the colony of extracted honey.

J. H. HAUGHEY.

Berrien Springs, Mich., S. W., July 15.

We had the finest bloom of all kinds of clover in many years, but the hottest and dryest June I ever saw. The last of June all clovers were killed; honey crop is very light, only 30 lbs. of comb to colony; extracted, 75 lbs. Prospect is fair now for a fall flow to winter. This is the shortest report for many years for Ionia Co. Bees are in fine condition.

Ionia, Mich., C., July 30. A. H. GUERNSEY.

The honey crop from clover is the best it has been in several years. L. D. ALLEN.

Scottville, Mich., N. W., July 21.

Our bees are doing fairly well this year.

ELMER HUTCHINSON.

Pioneer, Mich., N. W., July 21.

This is one of the best seasons I have seen in 32 years in this county for beekeeping, and we are getting a fine crop of extracted honey—from clover, raspberry, and milkweed mainly. W. HARMER.

Pierpont, Mich., N. W., July 24.

We are having a good flow of clover honey at this point. A. ROBERSON.

Lake City, Minn., S. E., July 21.

We are having damp weather, and the pastures continue to be white with clover. When the weather is fit they work at a great rate; but the weather is such that they can not leave the hive, at least half of the time. JAMES F. BRADY, JR.

Medford, Minn., S. E., July 18.

The white flow is over. Clover yielded finely for a few days, then the drouth burned it up. Basswood yielded but little, owing to cool nights; not more than half a crop of white honey in this locality.

N. P. ANDERSON.

Eden Prairie, Minn., S. E., July 20.

We are having a good honey-flow from white clover, but swarming has been the worst I ever saw. Colonies have already stored about 80 lbs. of extracted average, and we have plenty of rain, so it may reach the hundred mark or better.

JAMES F. BRADY, JR.

Medford, Minn., S. C., July 7.

The honey-flow stopped the 29th of June. Dry weather stopped it. Plenty of rain since June 30, but the flow did not come back.

IRVING E. LONG.

Marceline, Mo., N. C., July 12.

The white-clover honey-flow is still good. We need a little rain at present. The clover honey is the best crop harvested for years in this locality. Many thousands of pounds are going to be lost on account of a scarcity of bees.

G. L. LAUER.

Queen City, Mo., N. C., July 8.

Four weeks of good honey weather has given us a large yield, and it continues. J. L. GANDY.

Humboldt, Neb., S. E., July 9.

I have increased my apiary of 190 colonies, spring count, to 250, and have 400 supers about finished, of the finest fancy honey (white and sweet clover) I ever wish to see, and the flow is just at its best at this date. I expect to harvest 20,000 sections of fancy and No. 1 honey this season.

BELL E. BERRYMAN.

Central City, Neb., C., July 22.

Some of my best stands have made three hivefuls of extracted honey up to date, and the season is not here for two months. EDW. SCROGGIN.

Greenfield, N. M., N. E., July 29.

Bees seem to be making honey. A. E. LASELLE.
Georgetown, N. Y., C., July 29.

Pretty good honey crop so far.

OREL L. HERSHISER.

Kenmore, N. Y., W., July 8.

We had a good honey-flow from clover—the best I have known for years. J. W. LEWIS.

Lockport, N. Y., N. W., July 15.

The clover crop in this locality was the best in four or five years. MYRON C. SILSBEE.

Cohocton, N. Y., S. W., July 23.

Dry weather still holds here, and has cut down the honey crop very greatly. I have not begun to take the crop yet, so can't speak with definiteness.

JAMES McNEILL.

Hudson, N. Y., E. C., July 18.

Bees are not doing well in storing honey thus far this season in eastern New York. Buckwheat will begin to bloom about Aug. 1. The weather is hot and exceedingly dry, and crops are suffering for it.

Middleburgh, N. Y., E., July 22. N. D. WEST.

The white-clover honey harvest came to an end with a snap in this vicinity last Saturday night, the 5th. Drouth was the cause. Rains in New York were all near the lakes. Basswood showed unopened buds on July 4; leaves were eaten by beetles or worms. White-clover honey is perfection in quality, but quite a lot of unfinished sections.

C. W. WILSON.

Canastota, N. Y., C., July 7.

Bees have been gathering honey for the last two or three weeks quite lively—first from white clover, and lately from sweet clover. At the beginning of the white-clover bloom, of which we had an abundance, things looked very dark. On account of the cold nights, quite a number with frost, during the first half of the bloom clover did not seem to secrete any honey—at least, bees did not store any; but since the appearance of warmer weather the prospect has become quite promising. Some of my better colonies have already made 150 lbs. or more of extracted honey.

G. C. GREINER.

La Salle, N. Y., N. W., July 17.

The honey crop here will be the greatest in years. Marion, Ohio, C., July 30.

C. G. FRANCIS.

A great honey-flow is on here. L. A. TRUXELL. Peninsula, Ohio, N. E., June 30.

White-clover bloom is in abundance; yield of honey fair; all hives strong, with bees' prospects good. Bayard, O., E. C., June 21.

T. C. WILLIS.

Bees are in fine shape, and making lots of honey. I have 28 stands.

JOHN WELBAUM.

Arcanum, Ohio, S. W., June 28.

The honey season here is about over, and I have the best crop I ever had.

T. BARNES.

South Zanesville, Ohio, S. E., July 28.

There have been oceans of white and alsike clovers, but the floral matter contained scarcely any nectar. Too dry. Honey crop very short.

Bloomdale, O., N. W., July 14. M. N. SIMON.

Old beekeepers tell me there never was such a honey-flow as this year. The fields are white with white clover.

H. J. HAUDENSCHILD.

Loudonville, Ohio, C., June 23.

The honey-flow is about over with the exception of sweet clover, which will soon be. Our crop was fair.

CLYDE CORDREY.

Bellefontaine, Ohio, S. W., July 7.

The season has been the best in 25 years in Clinton Co., Ohio, since I have had bees. Lots of clover and lots of white honey.

Blanchester, O., S. W., July 14. D. G. LIDDIL.

We are having a good honey-flow out here this year, although the weather is a little dry.

HENRY V. BROWN.

Antwine, Okla., N. W., July 11.

At present the prospects look bright for a full crop of white-clover honey. The bees are working well.

B. E. ABBOTT.

Lucan, Ont., S. W., July 9.

Honey-flow is good. All good colonies made two Danzenbaker supers, and have started on the third. Jamestown, Pa., S. W., July 17. D. B. HILL.

The honey crop has been a good one with me—very nice and white honey.

WM. REIBER.

Spring Mills, Pa., C., July 18.

The honey crop is not as good this year, as it was dry in the first part of the season. H. C. BOYD. North Mountain, Pa., N. W., July 12.

The honey crop through this section of the country is poor.

ENOS O. STAUFFER.

Ephrata, Pa., S. E., July 1.

The clover-honey flow is now nearing the end, and has been one of the best for many years. Clover has been in bloom since May 26. The milkweed is now coming in bloom, and we expect a heavy crop.

GILBERT S. YOUNG.

Munson Sta., Pa., C., July 11.

The fine rains and hot weather have caused the greatest rebloom of white clover I have ever seen, and the bees are working again equal to their best pace in June. I shall have to extract and clear comb-supers to give room to store the new crop.

Wilksburg, Pa., W., July 28. W. D. KEYES.

We are not living in a land of milk and honey this year. If a line were drawn across Eastern Pennsylvania and New Jersey a little north of Philadelphia, you would find no white honey north of this line worth mentioning. South Jersey has been enjoying a flood of sweets. I have had no swarming; and a season that is so poor as not to provoke a few swarms is no good for honey.

F. G. FOX.

Pipersville, Bucks Co., Pa., S. E., July 10.

Honey harvest was over the last of June. Product in comb is very white, flavor delicious. First clover was early, May 15; but weather was too cold for nectar and for storing until after June 1, making the season very short. Returns are fair in quantity, fine in quality. Swarms are limited in this locality—i. e., about two natural swarms to twelve colonies. All supers off July 1, and dark honey is now going into brood-nests. Colonies have full stores, and are populous.

T. CHALMERS POTTER.

Doylestown, Pa., E., July 19.

Honey, half a crop. D. E. NUCKOLS.

Chatham, Va., S. C., July 15.

I have been in the bee business over 60 years, and this is the worst season I have ever seen. My bees have consumed some 55 lbs. of feed since I set them from the cellar. I used up 3000 lbs. of sugar.

C. M. LINCOLN.

West Rupert, Vt., S. W., July 16.

The honey crop will be a complete failure here this year—not a pound in sight. Drouth has ruined the clover. Basswood is to come yet, but we don't look for any honey. Worst year in thirty.

I. N. HOWARD.

Fair Haven, Vt., W., July 8.

Honey flood—increased from 42, spring count, to 84, and will receive about 8000 lbs. of extracted honey and 200 lbs. comb.

HERM. J. ROEBEL.

Menomonee Falls, Wis., S. E., July 24.

We have a great growth of white clover for this time of year (July 23). I never saw the like. The bees are working quite freely on clover. I have a good crop of honey, mostly white clover. Basswood did not do much.

A. D. SHEPARD.

River Falls, Wis., N. W.

Honey is rolling in at a great rate. The prospects are good.

ELIAS JOHNSON.

Lovell, Wyo., N. W., June 25.

Stray Straws

DR. C. C. MILLER, Marengo, Ill.

YESTERDAY the bees were fearfully cross, although storing heavily. The smoker was loaded with pure greasy waste, which we've never used much. Was it the fuel that made them so cross? Well, the smoker was emptied, and filled with wood. Bees just as cross as before, or at least kept on cross, and I don't know why. But I wonder if some verdicts about fuel are not hastily made, just as we would have decided against greasy waste if we had not compared it with wood. [See last Straw.—Ed.]

IN AMERICA no one seems to think of a hive-entrance anywhere except at the bottom, summer or winter. In Germany there are many hives with entrances near the top. In *Leipz. Bztg.*, 41, G. Leis tells of an old beekeeper who for 20 winters had closed air-tight the bottom entrance, allowing no chance for air to enter except through a bung-hole on top, and that was covered over so no light could enter. It would seem there was no chance for a winter flight, yet his bees always came out in good condition in spring. Luneburg beekeepers have for centuries used the upper entrance, and it is claimed that this secures greater freedom from mold and diarrhea in winter. [In going out with our inspector this summer we found entrances all the way from the bottom to the top of the hive, and some old boxes that had openings in half a dozen places. Bees were using all their entrances.—Ed.]

IN ENGLAND and in Europe drugs are more in favor for the cure of foul brood than here. Seldom is there a time when some drug is not lauded in German journals as a "sure cure," only to be replaced a little later by some new candidate. Now comes so high an authority as Dr. Maassen, who says, *Leipz. Bztg.*, 36, that no time should be wasted in such experimenting, as the disease can never be cured through chemical means. [Dr. Maassen is authority in Europe. We do not know why any one should fuss with drugs for the cure of foul brood. Some 25 years ago we tried out thoroughly the various drug treatments for the cure of American foul brood, but they all failed. Practically all the reports from reliable sources in this country show the same result. There have been cases where some honest investigators *supposed* they were dealing with the real foul brood, when the fact was it was something else. When they tried out the drug treatment it apparently brought about a cure.—Ed.]

WESLEY FOSTER says, p. 440, "When a queenless colony is found . . . set it on top of another hive and be done with it." A Kentucky correspondent asks whether his object in doing this is merely to unite or to give a queen, and asks what I would do with a queenless colony. Undoubtedly he means merely to unite without the trouble of giving a queen. What I would do with a queenless colony would depend. Early in the season, or with a weakling any time, like Mr. Foster, I would unite; although very early a strong queenless colony might be united with two or more others. Later in the season a strong colony would be given a laying queen from a nucleus kept to rear queens. If no such queen were on hand, I might wait for it, or I might give a virgin or a ripe queen-cell to the queenless colony. Emphatically I wouldn't try rear a queen very early, and just as emphatically I wouldn't break up a full colony because queenless in harvest-time.

A BURNING question is that one getting to be about burning cotton waste with and without grease. We've burnt lots and lots of cotton rags without ever noting bad effects. We never had much experience with greasy waste, but are now using some very rich in grease. I think it's the most lasting fuel we ever used—lasting, I should say, five times as long as the dry cotton. The smoke seems milder to breathe, and doesn't smart the eyes like wood smoke; but it seems to affect the bees more. With a smoker filled with it going its best, blown on top of a super, it makes the bees fly off in a cloud, instead of running down in the super. I think I never knew any other smoke to do that. [We believe we were the first to suggest and introduce greasy waste as a smoker fuel. Its trial in the first place was accidental. As we had quantities and quantities of it, and it continued to give excellent satisfaction, we kept on using it. In our judgment it is far ahead of any other fuel that was ever used. It furnishes a milder smoke, and yet subduing enough to do the work. It is lasting, and, most important of all, it does not gum up the smoker with creosote as do other fuels. It can usually be had for the asking at any machine-shop. But do not leave greasy waste stored around in a building near combustible material. It is subject to spontaneous combustion, and should, therefore, be stored in an empty hive or in a box or a small building remote from other buildings.—Ed.]

Beekeeping in California

P. C. CHADWICK, Redlands, Cal.

When I read of the bumper crop of honey now being secured in the East, I am led to think that, for the benefit of the market, it is perhaps just as well that our off year came when it did. Now that we are largely out of the market, we hope that our eastern neighbors will make a big hit, after which we shall be pleased to have our inning.

* * *

Wesley Foster, greasewood in *this* part of the world means almost any kind of shrub that is large enough to make a stick of wood. (stove size) to sell; and the term, as nearly as I am able to learn, is derived from the fact that the Mexicans, commonly called "greasers," go out into the hills and dig up and make into wood the various growths of this kind.

* * *

A member of my family sent east for a collection of flower seeds, among which was to be a flowering sage. My wife was especially interested in this new sage, for she had hopes that it might be of the commercial seasoning variety. It has grown nicely since early spring, and I have discovered it to be nothing more nor less than the California white sage. If kept over until another season it might produce some bloom; but as a flowering plant for which it was sold I do not consider it very satisfactory.

* * *

I can not too strongly commend J. L. Byer for his stand on "an abundance of old stores on the hive during winter." This, in my opinion, is the greatest asset of successful wintering of a colony, whether it be in California, Canada, Maine, or Florida. The fact of the matter is the bees of a colony must consume a quantity of stores if they raise a quantity of young bees. Without plenty of old honey and a large amount of young brood a few days of bad weather will often cause the best colonies in the yard to become worthless.

* * *

Wesley Foster and J. L. Byer both condemn the book-record system for the beekeeper who runs hundreds of colonies. I have not used that system for a number of years, but am going to give it another trial, for I believe there is more time wasted, many times over, in opening hives in a large apiary to ascertain their condition from time to time than would be required to keep an efficient record. It makes little difference what the mission of inspection is. If

there is a record to refer to, one can many times check up the record-book in a few minutes and know just what colonies need to be examined. The value of a record for keeping track of the age and energy of queens is in itself a great help, and may often help to get rid of the old and worn-out ones before they become a detriment to the colony.

* * *

GLEANINGS of July 15, p. 480, quotes from the *Western Honeybee* of July 1 a criticism on my crop report in GLEANINGS, p. 327, May 15. This may be a just criticism in a way; but I think if Mr. A. F. Wagner, who makes it, would figure the part Imperial County would hold in the amount produced, and the demand for our wild-flora honey in preference to any other in years of heavy production, he would find that the amount from his county would not only be a small amount compared to the production of the rest of the southern part of the State, but that the demand would be no greater for it than for any other alfalfa-producing locality. When the trade, both home and abroad, is trying to find out about the California honey crop, alfalfa is not given more than a passing thought—only honey from those flowers that are to be found in our semi-tropical climate being considered.

* * *

Another disastrous brush fire has just been extinguished in Riverside County, and that, too, in one of the best producing locations. Some very heavy yields have been secured in years past from the country just swept by fire, much of it being especially fine for late buckwheat, though some fine sage localities were also devastated. The fire is said to have burned over about 40 square miles. Unlike most of these fires, this one started by lightning, and the cloud from which it came did not rain sufficient to extinguish the flames. I submit the following extract from the Redlands *Daily Facts*:

Among the losses sustained so far are A. Hasenauer, sixty stands of bees; Thomas Rawson, several head of cattle, and several hundred acres of grazing land, and two large apiaries; this same loss was sustained by others. Thousands of dollars of excellent grazing land in sage sections are ruined. Several other lost bees, many apiaries going up in smoke. It is estimated that 20,000 stands have been burned, it being impossible to remove them. Owing to the fact that country roads are not wide enough for fire-breaks, unlike government-built roads they serve no purpose, and are so narrow that men can not fight oncoming fire, and it jumps the roads easily.

Notes from Canada

J. L. BYER, Mt. Joy, Ont.

The Toronto exhibition, known generally as the "National," has a world-wide fame for the excellence of its exhibits in general, honey not excepted. This year a radical change has been made in the honey department, and the exhibit will be looked for with interest. Instead of individual prizes being given, the National directorate have given a lump sum of money to the Ontario Beekeepers' Association, and asked them to put up a large and attractive exhibit. This is being done in the way of county exhibits being sent in, and the Association is to see that all is staged in an attractive way.

* * *

The circumstances mentioned on page 513, Aug. 1, relative to drones congregating in large numbers in certain places seems to be quite common. For many years I have noticed that the drones from our home apiary, as well as those from a neighbor's, about half a mile away, swarm by the thousands over a field about a quarter of a mile away from each of these two apiaries. Any nice sunny afternoon in July and August there is a great roar of flying drones in this place, and I can see no reason why this particular location is chosen; but the drones seemingly like the spot better than any other in the vicinity.

* * *

Since writing my last notes for this department, conditions have changed but little in the clover situation for Ontario. As forecasted then, the crop, generally speaking, is very light in eastern counties; light to fair in northern counties, and good to *very* good in central and southwestern counties. The markets are good, and in our own case all honey is sold at this date (July 11) except some pails that are held for winter sales. Quite a determined effort has been made by the wholesale trade in some quarters to bear prices, but in a general way the prices recommended by the crop committee are being obtained. A few beekeepers who had big crops, and feared low prices later on, sold at a figure below the committee's recommendation; but I suspect they see the mistake now. The Western Provinces of Canada take large quantities of honey; and as crops are good there this year, the demand is likely to be good and continue for honey all winter.

One feature of the honey market this year is that every small order from a family is likely to bring a repeat order in a short time. The reason for this is that the clover honey this year is the finest in quality that I have ever seen, and that is

going some, as Ontario generally produces some pretty good stuff in the honey line.

* * *

I heard a farmer once say that farming is a gamble on the weather. No later than a few weeks ago, one of the last men we would suspect of gambling made the same statement to me in regard to beekeeping. I refer to our mutual friend Mr. Pettit; and I know, Mr. Editor, it will shock you to learn that our friend is engaging in and advising others to go into a business that has a tendency to develop the gambling instinct that seems to be inherent in human nature in general. I will leave you to deal with him in the matter. I should just like to say that there is a certain amount of luck or chance in beekeeping that has all other rural occupations "beaten to a frazzle," to use a term quite familiar to you chaps "over the line." For instance, up at the Lovering yard, which is 100 miles north of our home, when there about May 24 I certainly thought by conditions in general that the bees would leave the others away behind that are in York Co. around our home, at least ten acres of clover up north to every acre around our home yards, to say nothing of other honey sources of which we have nothing here. The season is now over, and up north we have about 35 pounds per colony, while here the five yards have averaged four times that much. Shortly after I left the north yard this spring, late spring frosts damaged the clover badly, and then the prolonged drouth finished up the work. Here at home the frosts did little damage; and while we were a bit short of rain most of the time, yet some nice showers kept the clover quite fresh for a while, and the yield of nectar was very good indeed. In writing the July Notes I stated that buckwheat prospects were fine; but since that item was written we have had practically no rain, and now it looks as though we shall do well if the bees get enough buckwheat to pay the feeding-bill. It is now Aug. 11; and unless rain comes soon, certainly we can not get much buckwheat honey, as the plants are stunted and the ground all parched and cracked open in many places. These are commonplace occurrences, of course, to the beekeepers who have been in the business for years; but perhaps a recital of some of these things that are *likely* to happen may be the means of helping some beginners to realize that, after all, beekeeping has trials and disappointments to put up with as well as have other pursuits.

Beekeeping Among the Rockies

WESLEY FOSTER, Boulder, Col.

WESTERN EXTRACTED AND COMB HONEY.

The comb-honey producer has to be a better beekeeper than the extracted-honey man. If you want to take it easy, don't produce comb honey. But if you would prefer to worry over marketing more than over the preparation of supplies, why produce extracted honey? The western extracted-honey producers are up against the marketing problem far more than the western comb-honey men. When we can get 11 to 12 cts. per section for comb honey, and only 6 to 7 cts. per pound for extracted honey, more money is to be made in comb honey. I may be disputed on this, but I believe I am right in the majority of cases.

* * *

REMODELING HIVES.

The average western beekeeper has more empty hives than he wishes; and the question of filling them is an important one; but first it is well to go over them carefully and renail the corners so that the tin rabbets will be in solid. True up the top and bottom with a plane if necessary, so that they will not allow an entrance for bees any place but at the proper entrance. There is one gratifying thing about the best hives now sold—they are made deep enough so that you can plane off a little on the bottom to square up in case the hive is off a little. Hives now made for western trade are made deeper over the frames and below them to allow for shrinkage in this climate. In fixing up the bottom-boards do not forget to paint them on both sides. Put a 2 x 2 cleat at each end for a hive-stand if you do not use them. They strengthen the bottom wonderfully. My uncle, Oliver Foster, dipped all his bottoms, hive-covers, and bodies in boiling linseed oil. Then two coats of paint were applied. If you want to see hives that hold their shape, and last in this western country, you ought to see some of them.

In remodeling cases don't fool with anything but a metal-roofed cover. The wood covers are absolutely "no good" for the western comb-honey man. With the extracted-honey man it is different. But I have yet to see the first all-wood cover that would not leak, and leak badly, in less than ten years' use beneath our western sun.

* * *

COST OF SOME BEEKEEPING OPERATIONS.

No. 1 sections cost about \$4.50 per thousand. Extra-thin foundation costs 55 cts. a pound. Scraping and cleaning supers and separators costs five cents each. A

handy boy or girl can make good wages folding and "startering" sections at \$1.50 a thousand. The expense for supplies as run by the average western beekeeper is about as follows. The expense is based on supplies for one hundred colonies. Three supers to the hive will be needed.

7200 sections at \$4.50, \$32.40; 50 lbs. extra-thin foundation, at 55 cts., \$27.50; scraping and cleaning 500 supers, at 5 cts., \$15.00; folding and startering 7200 sections, at \$1.50, \$10.80. Total, \$85.70.

By using No. 2 sections the cost may be reduced to \$27.00 for sections; and if a one-inch top starter is used instead of a three-inch the expense for foundation will be cut from \$27.50 to \$10.00. This, however, is doubtful economy. If one scrapes and cleans the supers and separators himself, not counting the labor, this item will be eliminated from the estimate, as will the expense of folding and startering the sections. But the busy beeman can not afford to do this work himself unless during the winter months, and even then a man's time should not be taken up with this class of work. By this doubtful economy in sections and foundations, and doing all the work oneself, the expense for preparing the supers for one hundred colonies will be \$37.00 instead of \$85.70.

For the normal increase, at least 25 extra hives will be needed, costing \$1.60 each, or \$40; and for these hives 30 lbs. of medium brood foundation will be necessary. At 45 cts. a pound this will be \$13.50, making an additional expense of \$53.50 for the increase.

A man will be able to nail up about ten hives a day. It will require four days to nail up and paint 25 hives. At \$2.50 a day we have \$10 for this item.

The cost of new equipment which goes into permanent fixtures should not be charged in the season's cost unless it is subtracted from the value of the increase that is made. Ten dollars should be allowed for miscellaneous supplies. Here, then, we have an expense of about \$100 if labor is not counted, and \$160 if labor is counted, for preparing 100 colonies for the honey-flow.

Of course, no feed for bees is included or rent for location or rent of shop, or feed for horse or care of auto. With the strictest economy the expense for supplies for comb honey can not be brought under \$1.00 per colony, and it can easily be made to run up to \$2.00.

Conversations with Doolittle

At Borodino, New York.

WHY SO MANY DRONES?

"If I am correct, you advise that only a little drone comb be allowed each colony in the apiary, except to those which have queens especially selected from which to rear improved stock for mating purposes. Now, there are a few of us who think that there is some unknown or unseen advantage in having a lot of drones in a hive, just as we find them in box hives, or where the bee-keeper pays no attention to this matter of comb-building. From a close watch I feel assured that colonies having their own way in this matter are fully as prosperous, if not more so, than those from which I have carefully excluded all but about an inch of drone comb. This being the case, are not you folks who are advising only an inch or two of drone comb making a mistake?"

It may be well to look into this matter a little, as I do not wish to advocate a false doctrine. In a state of nature, colonies do not exist in very great numbers in any one place; and when colonies are from one to several miles apart, either in hives or in trees, it becomes necessary that a great number of drones emerge in each colony in order that a sufficient number of such be found within easy reach to render the queen's bridal flight successful. Otherwise the queen is liable to be caught by birds, or overtaken by some mishap through long-continued roaming, so that she may never return. Nature is very lavish, and has provided a great number of drones in a hive, or any home of a colony of bees, at swarming time, and this is but another evidence of the correctness of the theory of natural selection. In other words, there must be enough drones reared in each colony to make it an almost absolute certainty that the queen of this colony (or of any other for that matter, for several miles) will be sure to find one in a few minutes, or the half-hour at most that she spends in the air. Upon her life and successful mating the existence of the colony depends, as there are often no other means left for the continuance of her colony.

But in case of 10, 25, 50, or 100 colonies being congregated together, all of this, through domestication, is changed, and thus the drones reared in the two or three colonies from our selected drone mothers will serve the same purpose as if those two or three hives were the only ones within the range of flight of the bees. From this it is plain that it is useless to rear such a great number of drones in every hive.

That the drone-rearing colonies are any

more prosperous than those being restricted to an inch or two of drone comb is something I have never been able to discover; but, on the contrary, I have many times noted that this multitude of drones consume so much of the honey gathered by the minimum number of workers, necessitated through a minimum amount of cells of the worker size, that very little surplus could be obtained from such colonies, to say nothing about having to supply the needed amount of stores for winter. What advantage can there be in the rearing of a large number of drones? They do not work; they are never seen out in the fields on the bloom which secretes nectar; they eat the honey of the hive, and their rearing decreases the number of workers reared. Are these facts to be laid aside and overlooked? In a square inch of comb, only about 36 drones can be reared, while the same space will give about 55 workers, both sides of the comb being reckoned as a matter of course. Taken in round numbers, a square foot of comb will give 8000 workers, or about 5000 drones. Then it takes 24 days of time in which to perfect these drones, while the workers will emerge in 21 days from the laying of the eggs by the queen. And it will take about the same amount of food for the rearing of each, since both occupy the same space. Is not this reasonable? And when all the 8000 have emerged from this foot of comb we have a fair-sized swarm of honey-gatherers added to the other forces of the hive which will almost if not quite turn failure into a successful surplus. Hence these drones that are reared at great expense are in the way of the household duties of the home; and they decrease the profits by the loads they carry out on every flight.

It is claimed that drones keep the brood warm; but is it not plain that, when there were fewer bees in the hive than when they arrived, *they* had to be first kept warm? And these drones emerge only as warm weather is coming on, at a season when there is little danger of any brood getting chilled. Then on all cold days, and as night comes, all the forces of the hive are gathered together there, so this warmth from the drones is hardly a sufficient plea for their existence.

All things considered, it seems clear that it pays to exclude all except an inch or two of drone comb from all but one or two colonies in any apiary having ten or more colonies in it, allowing much drone comb only to our best drone-breeders.

General Correspondence

APPEAL FOR EXPERIMENTAL WORK IN BEE IMPROVEMENT

BY W. WHITE

The part played by man in the past in modifying the honeybee to his own uses appears to have been insignificant, principally for the obvious reason that, until recent times, the greater portion of the life-history of the insect has been a closed book to him. That some modification has been effected is scarcely to be doubted; and, in view of the immense strides that have been made in this region of applied science during the past decade, it is not too much to hope that the near future contains the fulfilment of the beekeeper's desire for a "better bee."

A thorough and searching investigation of racial characters is a necessary prerequisite to any substantial advance in this direction—a fact which, in the discussion of the subject of bee improvement, has hitherto been almost entirely ignored. Scientific inquiry itself has been confined almost wholly to the study of anatomy and disease, and but little work has been undertaken to ascertain the manner of inheritance of the characters of the bee.

As is well known Mendel experimented with bees many years ago, but, unfortunately, the records of these experiments have not been discovered. The work has been recently taken up again by several biologists in Europe, and doubtless the results of their investigations will contain much that will be of great interest and, possibly, of supreme importance to the beekeeping fraternity. The work of Mr. Sladen is fairly well known, especially in Britain and in Europe generally. He has conclusively demonstrated that Mendelian principles obtain in the case of the honeybee. The recently published results of his observations may be summed up as follows: In the cross between a golden queen and a black drone, segregation of the factor for the golden color from that for black occurs in the second generation. The workers and queens of the first generation of the cross consist entirely of an intermediate form, while the female offspring of this generation of intermediates consists always of goldens, intermediates, and blacks, the intermediates being usually greatly in excess of both the goldens and blacks. The evidence furnished by Mr. Sladen's experiment shows that, as regards color characters, the bee exhibits the same mode of inheritance as other animal organisms.

It is an unfortunate possibility, however, that the investigation of bee characters may proceed along lines that will prove of but little interest or of immediate benefit to the beekeeper. The experimentist in this department of science usually selects for his purpose some easily recognizable physiological character; but in the case of the bee such characters can be of but little economic value. The utility characters of the bee are such that they are not likely to commend themselves to the scientist as furnishing material for research work in heredity, and the question will doubtless arise in the minds of many beekeepers as to whether some effort should not be made to induce government authorities to institute special experiment stations for work along the line I am suggesting.

What constitutes the "better bee" has been discussed at great length during the past few years, and some extravagant claims have been put forward as to success achieved in producing wonderful strains of bees. If Mendelism teaches us one thing more than another it is that such claims, based as they are upon work of a merely empirical nature, are extravagant. Breeders must be reasonable in their demands. They must not expect to create. They may only hope to discover, at the most, what already exists, looked up though it may be, in nature's wonderful storehouse of gifts. The breeder is an explorer; but the possibilities that are open to him are boundless. He must bring to the work all the patience and skill he is possessed of; for the task of unraveling and isolating factors which make for "improvement" is often most intricate and difficult. The element of elusoriness that enters into the problem as a result of the peculiar nature of the bee adds greatly to the difficulty of the work. Yet notwithstanding all that may be said in regard to the complications resulting from parthenogenesis and the difficulty in controlling matings, there is not the slightest doubt that improvement of the bee is feasible.

The necessary preliminary analysis of utility character can not be made under the conditions that ordinarily obtain in the practice of beekeeping. To ascertain and to distinguish between clear-cut utility characters requires an absolute uniformity of conditions that is never found in the commercial apiary; for the bee responds to its environment with an exceedingly high degree of sensitiveness. Every-day experience proves, beyond a doubt, that great differences exist in utility characters. With-

in the limits of large yards the extremes of variation are often to be found. But the exact range of variation is difficult to measure, and, in the ordinary way, it is almost impossible to gauge the extent to which variations may be due to environmental conditions on the one hand or to factors inherent in the bees themselves on the other. The large yield may occur in a very mediocre colony, and be due to a fortuitous combination of favorable circumstances, while at the same time, by reason of adverse circumstances, a colony of a much better type may fail to do itself full justice, and will fall short in the harvest. If, then, a means can be devised whereby uniformity of conditions may be insured, a large part of the difficulty in obtaining a correct conception of the nature of the utility characters of the bee will be overcome, and the breeder will be well on the way to discovering the potentialities of the subject.

To illustrate the value of analytical methods of investigation, I will refer briefly to the results of Dr. Raymond Pearl's studies of fecundity in poultry, carried on at the Maine Agricultural Experiment Station. Nearly every poultryman who has endeavored to improve the laying qualities of his flock knows how difficult it is to fix a strain of fowls perpetuating the high-laying powers of any particular hen. A fowl showing an abnormal egg-record can not, in fact, be depended upon for giving a progeny that will show a capacity for egg-laying above the average. The ordinary laws of heredity do not appear at first sight to apply in this respect. The following summary of Dr. Pearl's experiments will furnish a solution of the problem, and at the same time serve to indicate how similar questions may be attacked in the case of the bee. The facts established are:

1. Fecundity is inherited strictly in accordance with Mendelian principles.

2. Observed individual variations in fecundity depend upon *two* separately inherited factors. The first of these two factors determines a winter production of eggs numbering from 1 to 30 per bird. The presence of the second factor, in addition to the first, increases the winter production above 30 per bird.

3. High fecundity is manifested only when *both* of these factors are present together in the same individual.

4. Either of these factors, when present alone, causes about the same degree of low fecundity to be manifested.

5. One of these factors, viz., the second, is *sex-limited*, like the barred-pattern factor in the Barred Plymouth Rock.

6. There is a definite and clear-cut segre-

gation of high fecundity from low fecundity in accord with simple Mendelian principles.

Those acquainted with the interesting facts of "sex-limited" inheritance will readily understand from 5 how it is that simple selection of highly fecund females is not sufficient to insure a similar degree of fecundity in the progeny, and they will likewise appreciate the nature of the difficulty which has puzzled the poultry-breeder to so great an extent. Results such as these show conclusively that anomalous conditions, apparently defying the ordinary laws of nature, are often capable of simple explanation when subjected to careful analytical scrutiny.

Fecundity in the bee is a character of very great importance. Other things being equal, the highly fecund strain will produce a proportionately large amount of surplus. There are good reasons for believing that distinct and clear-cut degrees of fecundity may exist in bees as in poultry. Without doubt, there are strains which exhibit very striking divergences from the normal; and the mere elimination of the least fecund strains would result most probably in the raising of the standard to a very considerable extent.

Beekeepers often speculate, without hesitancy, as to the nature of the characters upon which proficiency in honey-gathering depends. In the absence of special investigation, however, the matter must remain largely one of mere speculation. Under the usual methods of beekeeping, subtle yet important differences of character may pass unnoticed, or their value be wrongly estimated. For this and other reasons, special preparations and methods of procedure are necessary for the experimental work of testing characters. I would suggest, as a first essential, that all the queens for the experiment should be of precisely the same age, and have been reared under conditions as nearly alike as possible. They should be introduced simultaneously, each to an equal weight of workers, and hived upon empty combs. In every possible way the greatest care ought to be exercised to prevent any risk of disturbing factors entering to lessen or destroy the accuracy of the results of the experiment. Thus it is possible to obtain an accurate estimate of the manner and extent of the egg-laying of the various queens under observation. When sufficient time has elapsed for the whole of the original workers (which should preferably be of a different race from the queen) to have disappeared, and the hives are populated by the offspring of the experimental queens, the various observable characters of the

workers may be placed under surveillance. For the purpose it will be better to shake the colonies at this point, and to rehive them upon starters of foundation. The capabilities of the colonies in the matter of comb-building and honey-gathering may thus be gauged, the means of practicing selection are provided, and the work of eliminating the "unfit" may be proceeded with if this latter be the object of the breeder.

The scope of all experimental work of this kind must largely be determined by the originality and aim of the investigator. Whether his purpose be to establish a new race of bees, in which case he will probably work with at least two of the ordinary races, or merely to isolate the best strains in a given race, his real difficulties commence with his work of breeding. For this, mating-stations appear to be absolutely necessary. This subject of mating-stations has received considerable attention of late years, and there appear to be no obstacles in the way of finding suitable localities for them. The one essential condition is that there be no honeybees in the neighborhood other than those to be used for the special purpose of mating.

It should not be forgotten that similarity of appearance is no sure guide to inherent qualities. I heard it suggested at a recent convention that yellowness in the bee indicates ability to resist European foul brood; that the yellower the bee the more immune is it to the disease, and *vice versa*; that the darker the bee, the smaller the degree of resistance possessed by it. The evidence upon which such a statement is based is of the flimsiest kind. That the Italian race has proved itself better able to resist European foul brood than the black bee of this continent may, perhaps, be granted. It is not at all difficult, however, to adduce evidence showing that the black bee of Britain and the neighboring regions of Europe possesses the same degree of immunity as the Italian. Two individuals, undistinguishable in appearance, may show in their respective progenies characters greatly differing from each other. The purity, or otherwise, of a queen is not decided merely by color, but by the nature of the factors existing in the reproductive cells which give rise to the various distinguishing characters of the race or strain.

In his efforts to produce a race which shall combine the greatest number of desirable characters the bee-breeder of to-morrow may be under the necessity of making selection from several races. His task, as I have already pointed out, will be principally to determine what the factors are upon which the various desirable utility

characters of the bee depend. It often happens, as in the case of fecundity in poultry, that what appears to be a simple character proves, upon analysis, to result from the interaction of two or more distinct factors. As soon, however, as the analysis has been made, and the constitution of the characters expressed in terms of Mendelian factors, strains can be built up which will breed pure for those characters. The vague ideas of past generations must give way to a more exact knowledge and to clearer conceptions of what is involved in the processes of heredity. The guidance of science must be sought and followed. The problems arising from the parthenogenetic nature of the drone are largely mathematical, and not by any means incapable of solution, while the difficulty in controlling matings is minimized in its importance by the fact that the colony is the unit we are working with and not the individual insect, whether drone or queen. The object of the breeder will be to obtain colonies in which both the male and female progeny will transmit to the descendant colonies the desirable characters already analyzed, and his full efforts will be directed to this end. In spite of the abnormal conditions attached to bee-breeding operations, in spite of many difficulties of which even beekeepers are not cognizant, one has every reason to hope that, when the best and most reliable scientific methods are applied, the same success will attend the efforts of the bee-breeder as has accompanied those of workers in other fields of applied agricultural science.

Brantford, Ont.

How to Remove Bees from a Wall or Tree by Means of a Bee-escape

There is one little discovery I have made which I have never seen described, which has worked successfully. When bees have located in a house or tree in such a way that it is difficult or impossible to remove and save the swarm, I close all exits except one and place a wire cone over that one, leaving a small opening through which the bees can pass out but never return. The cone must be carefully tacked around its base. If a hive is conveniently placed containing a frame of brood, the bees will soon take possession, and will prove to be something of value instead of a detriment, as is often the case. I have succeeded, without the use of the brood-frame, in capturing the whole swarm, which was soon well provided with stores and brood.

Long Grove, Iowa.

GEO. W. CURTIS.

[The above is the principle of the Fisher plan described in The A B C and X Y Z of Bee Culture. A Porter bee-escape will be found rather better than a cone escape, and at the end of four or five weeks it should be removed to allow the bees, the majority of which are now in the hive, to rob the honey out of the combs in the wall or tree. When the escape is removed, sulphur smoke should be blown into the opening to kill the few bees remaining and the queen. A new queen must be provided for the colony or else young brood given from which the bees can rear a queen.—Ed.]



Field day, Massachusetts Agricultural College, Amherst, Mass., June 11 and 12. See editorial in the July 1st issue, also in this issue.

HONESTY IN ADVERTISING QUEENS

What Constitutes a Golden ?

BY PENN G. SNYDER

It is an acknowledged fact that, when goods are bought from description in some advertising medium, the article purchased should be as represented. It is very unjust, to say the least, to bargain for one thing and then receive something that possibly does not approach in looks or value the impression received from the advertisement.

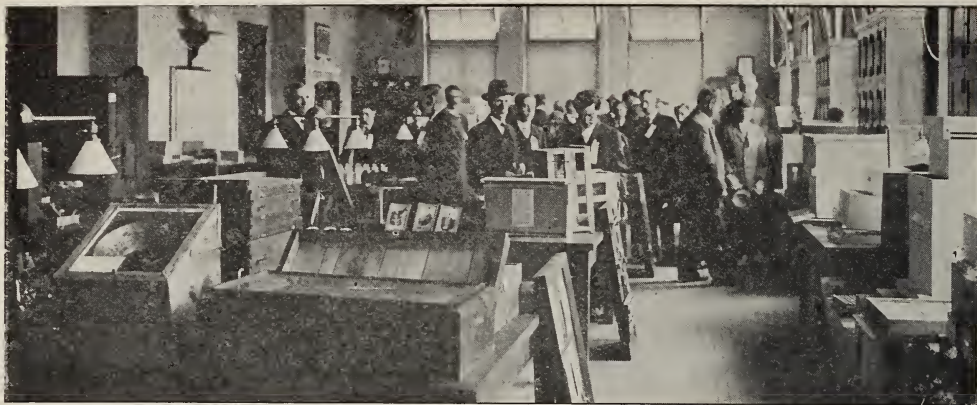
There is absolutely no harm in saying in one's advertisement, "I have the finest queens ever produced." Such a statement is a general one, and can be accepted as such when summing up; but if the adver-

tisement reads, "My bees are all free from foul brood," or "My red-clover strain have tongues 23-100 of an inch in length," or "My goldens are full six-band," then a specific promise is made to the intending purchaser, and it would be well for all concerned if the advertising manager of the periodical should demand of the advertiser a proof of his assertion.

There is nothing in the world much cheaper than talk. When put in the form of an advertisement it becomes a little more expensive; but if it comes to making statements that are not true in the published advertisement, there is no limit to the claims that can be made. No doubt such advertisements do the honest advertiser a great injustice, as his statements are not so florid



The collection hall of the Massachusetts Agricultural College, holding the exhibit at the beekeepers' convention, June 11 and 12.



Partial view of the exhibits.

or highly colored, and so do not look as attractive to the buyer's eye.

Take, for example, the yellow coloring of golden bees. The advertiser can say, "I sell yellow bees, the brightest and best; strictly first-class goldens. I have the finest goldens in the United States;" or he can say, "My bees run five and six band golden. My breeding stock runs full six-band gold; my breeding queens and drones flying are entirely yellow." When the latter statements are made, there is a specific promise, or supposedly a guarantee that such is a fact; but is it?

This is where the advertising manager should require, before printing such advertisements, full proof.

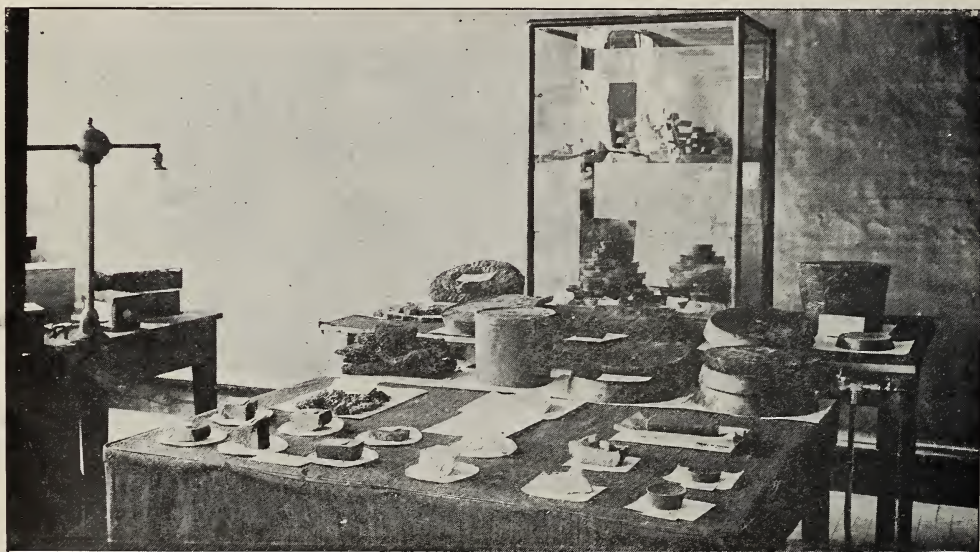
When such has been forthcoming and

demonstrated to his entire satisfaction no one can be harmed—neither the advertising medium, the purchaser, nor the advertiser.

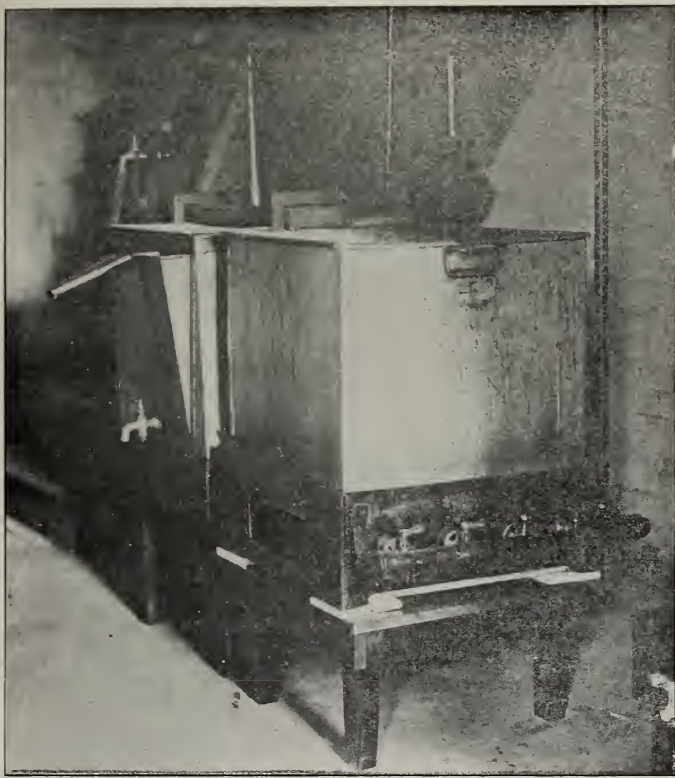
The first four of the above statements are general. They really do not guarantee any thing definite; but the latter statements are of an entirely different character.

It is not the intention of this article to give the impression that any advertiser intentionally makes a misstatement. He believes his advertisement to be true, or practically so.

There is considerable ignorance among the beekeepers, if not the producers of queens, as to what constitutes a golden bee, as well as to how many bands or segments the bee possesses. Any bee that is very bright in a colony, if only three-banded,



Display of wax, including several samples of foreign wax in the rear. The large cakes show samples of different renderings with the equipment at the college.



Melting-tank and Hershiser wax-press.

could be called a golden; but that is not the purchaser's idea of the variety. A queen which will not throw a large percentage of four-band yellow or better should not be classed as a golden.

The best in the color line which has so far been produced is a queen whose worker progeny is practically all yellow with the exception of the last segment or band which is the tip or end of the abdomen.

A frame of bright yellow bees looks very fine to their producer, and he really does not know, as a rule, how many worker bees run three, four, or five band yellow. It is necessary to confine a number, not less than 100 workers, in a small dark cage which has a bee-escape attached;

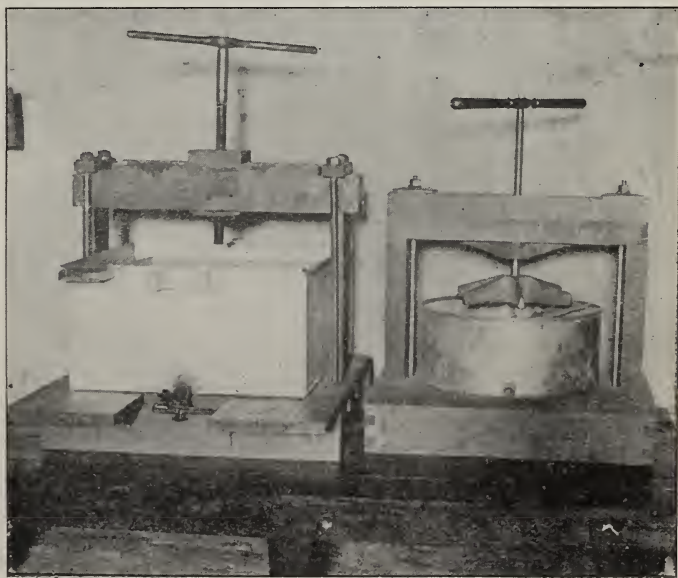
then as the bees run out they can be held one at a time, and examined as to what their coloring may be.

This is a safe way of testing the amount of color in your bees.

The average examination is, no doubt, made by examining a frame of bees and trying to count the bees having different numbers of yellow bands. Such a method is too uncertain, for the tendency would be to count the same bee repeatedly, and not know it; and the brighter the bee the more quickly it takes the eye, and the more likelihood of such bee being counted more than once.

A queen whose worker progeny runs 90 per cent five-band golden is a very scarce commodity, and it is doubtful if there are half a dozen such

queens in the United States. Such a queen, or one not throwing such a good percentage of yellow workers, will produce an all-gold-



Sibbald and Hatch presses.



One of Vernon Burt's hives for the production of comb honey. Mr. Burt says this scheme of putting his brood-bodies upon four blocks so as to provide entrances for all four sides goes a long way toward eliminating swarming. See editorial in this issue.

en virgin in practically every instance, providing they do not become chilled previous to hatching. Her drones will be yellow from tip to tip, with a very little dark shading on the last two or three segments. They will run pretty uniform in coloring, and there will be no black ones among them.

Such is the best type of golden from the standpoint of color that has so far been produced.

It is assumed you will all agree that there have been far too many advertisements giving an impression which the actual stock can not substantiate. Taken from the breeder's standpoint, he might sell a certain number of queens by making large statements; but will the purchaser be satisfied? and will he buy again? That is the question.

If the publication in which the advertisement is printed guarantees its advertising matter, it certainly is not going to uphold this standard by accepting and publishing such advertisements; and the reader who may read between the lines will place less reliance on the journal than he otherwise would.

The buyer who expects a straight five or six band yellow bee will be most horribly

disappointed, and he certainly should have some redress when straight yellow five or six band stock is advertised.

There is no doubt that if the advertising manager of the periodical and the advertisers would come to a little better understanding they would see it is to their advantage as well as their duty to their readers and prospective customers to give the customer as nearly what they pay for as is possible.

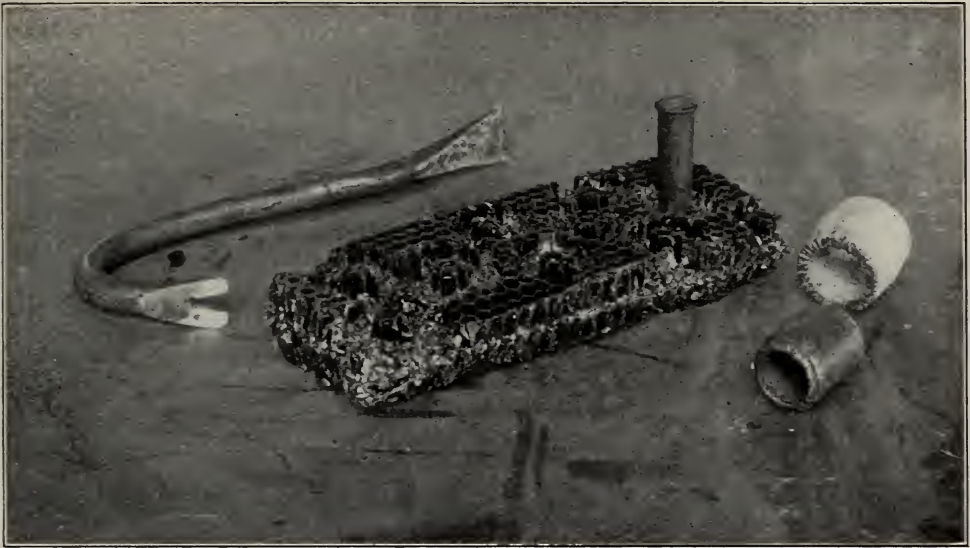
Swarthmore, Pa.

A NEW SCHEME FOR STARTING QUEEN-CELLS

BY WM. A. SEDDING

The engraving shows my hive-tool and a contrivance for starting queen-cells from the egg. All are of my own invention, and made from such material as I could find on the ranch. The hive-tool is very handy. I have been using one like it for the last five years. It fits nicely in the hollow of the hand, and also slips into the side pocket like a gun.

To start queen-cells from the egg or larva without transferring, I take the cartridge



Wm. A. Sedding's hive-tool and method of starting queen-cells without grafting larvæ. With the brass cart-ridge shell the selected cell is cut down to the midrib; then the short piece of pipe is slipped over the cartridge and twisted around, thus grinding away the surrounding cells.

shell, set it over a cell I want to save, and push it gently down to the midrib. I then take the hub (either the wooden or iron one), and place it over the shell; then by holding the shell with the fore finger of my left hand I give the hub a turning motion with my right hand, thus grinding the surrounding cells down to the foundation. Then I lift both the shell and hub from the comb, and the cell is ready for the bees to start on, just as shown in the picture.

Monterey, Cal.

DOES BEEKEEPING PAY?

BY HENRY REDDERT

When I am asked whether beekeeping pays, I answer, "Yes and no," for it depends entirely on the one engaged in the business. If he has an irritable temperament he had better leave bees alone. If he is cheerful at all times in adversity as well as in success, I advise him to go ahead, provided he equip himself with the necessary theoretical knowledge to be gained from text-books and bee-journals before starting in. If one wishes to become a practical mechanic he must serve an apprenticeship of from three to four years. The same holds good in beekeeping.

I once asked an old experienced beekeeper who also raised sheep, having a flock of about 400, which of the two paid the better; and his answer was, "The bees." From

350 colonies, he had harvested the previous year \$1500 worth of honey. In the forty years that he had kept bees in connection with a large farm the bees had always paid better in proportion. This man had become the "skilled mechanic." He began with bees on a small scale, and increased as he gained in knowledge by practice and reading.

Some time ago a lady asked the editor of a bee-journal if she and her daughters could make a living by keeping bees. She said they would like to go to the country in the good fresh air to escape the headaches she had when sewing in a densely populated city. Apparently she knew nothing about bees, nor had the slightest idea that some theoretical knowledge should precede the practical. Judging from this I thought to myself that she had better leave beekeeping alone, and remain with the work she was accustomed to—for the present at least.

I have kept bees for the last twelve years as a side line for pleasure and profit, and have had more or less success—enough, at least, to urge me on to greater efforts. Before I ventured into the business I lived in the city proper, although always a lover of nature. When very young my father lived in the country on a small farm, and perhaps I inherited this love of nature at an early age.

Before I kept bees I had never seen a bona-fide bee-hive until an intimate friend became interested and purchased two hives



Henry Reddert's suburban apiary, Cincinnati, Ohio.

from a beekeeper. He invited me to visit him; and when I did so my love for rural scenes all came back. I watched his bees coming in and going out of the hives for hours at a time, and I concluded to have some myself. I sent to the public library for a book on beekeeping. The first I received was written by Huish, an English writer. As it was written in 1817 the pages were yellow with age. Next I read Langstroth's "Honey Bee," then Quinby's "Beekeeping," and in addition I subscribed for two bee journals. This reading kept me busy for two years. I made two hives on the Langstroth pattern in the cellar of my home, all the while happy in the thought of my future venture. I read bees, thought bees, dreamed of bees, and awoke in the morning with bees buzzing in my ears. I certainly had the bee fever.

My next thought was to get a suitable location in the suburbs. My text-books and bee-journals had advised me about this, and I finally found one. My new home was surrounded by elm and poplar trees, with a few peach trees, a fine lawn, and acres of white and sweet clover all around. Here I took care of my two colonies, which I purchased from a go-as-you-please beekeeper, to the best of my knowledge and ability. I became interested in the beekeepers' association, and made many beekeeping friends.

During the last 12 years I have failed to get a crop but one year, when a very long drouth almost burned the clover out of the ground. My family is fond of honey, and now that we produce it ourselves we use plenty of it. The surplus we sell at a fair profit. We are all in good health, which can not be measured in dollars and cents.

The photograph shows a part of my apiary. The fence on the north side acts as a

windbreak so that my winter losses are reduced to a minimum.
Cincinnati, Ohio.

AFRICAN BEES STING BLACK WORSE THAN ANY OTHER COLOR

BY W. G. DAVIS

Here in South Africa, where beekeeping is still in its infancy, a good many bee-owners still persist in keeping bees in the old-fashioned way. Barrels, boxes, and, in fact, any thing in which bees will live,

are used for honey production. When I say bee-owners I do not mean beekeepers, for all bee-owners are not beekeepers. The majority of these, when they start taking the honey, cut out the brood and discard it, and take the honey. There is always a certain amount of honey allowed to be about, and



A BUNCH OF WHITE LEGHORNS AND THEIR KEEPER.

Dear Mr. Root:—I have read Mr. Root's many articles in GLEANINGS relative to his chickens, and have often wondered if he has tamed his as I have mine. The enclosed photograph is a picture of a bunch of White Leghorns we raised last summer, and myself.

Denver, Col., Jan. 15. MRS. LOUIS F. JOUNO.



W. G. Davis, Johannesburg, Transvaal, S. A.

the result is that the neighboring bees start robbing, and the trouble commences. Many head of cattle, poultry, etc., are lost every year through the carelessness of these so-called beekeepers. When this happens I am invariably called to attend to the bees, and I am sure I could relate a score of instances where the bees have done considerable damage.

The first time I was called I had on a black suit of clothes; and when I arrived at the scene of destruction the bees immediately set about stinging my clothes, and I am sure that there were hundreds of stings on the clothes when the bees were eventually quieted. Among the stock lost were black pigs and fowls, and also a black dog. On returning to my home I thought it funny that a buff-colored dog on the premises did not have a single sting on it, and I resolved to try an experiment on a future occasion. The opportunity was not long in coming, for a week later I was informed that a swarm of bees had gone on the rampage and killed a lot of poultry and a valuable cow. I took with me my new outfit—a khaki-colored suit and veil which I had specially made. On arrival at the scene there were 29 fowls, 2 turkeys, and a black and white cow lying dead. The bees were then stinging something awful; and although they had stung to death the above-mentioned stock, they did not attempt to sting my clothes or veil, although my assistant, who had on a black veil, received

a good many stings on his neck. There were nine Buff Orpington fowls in the yard with the others; and after the fray I examined those fowls thoroughly, and could find only three stings on those buff fowls, while those that were dead were literally covered with the stings. I have since used the outfit on a number of occasions, and found the bees never attempted to sting me when I had it on.

I submit this experiment to your readers for consideration. I feel sure they will quite agree with my remarks. There is one great drawback about a buff-colored veil: and that is, it is almost impossible to see the eggs in the cells when examining the frames of a bar-frame hive; but for special emergencies as above, I commend it to your readers for a trial.

Why do bees sting black? Why do we look askance at any thing that is foreign to us? There are not black flowers for the



A GLIMPSE OF OUR FLORIDA DASHEENS.

As the above picture was taken, as nearly as I can make out, some time about the first of July, the dasheens are very much larger just now, Aug. 5. The picture gives you a little glimpse of some of the Florida pine trees and other vegetation that grow on our five acres.—A. I. ROOT.



Sprig of pine covered with vegetable honey-dew. The leaves that glisten are fairly varnished over with the sweet secretion.

bees to work on, and black is consequently foreign to them, while, on the other hand, there are plenty of yellow and white flowers that they are constantly working on, hence their frenzy to sting the former color. I notice you mention the interior of the hive is black; but I think you will alter your opinion when I tell you I was locked in a dark room for 18 months with an eye trouble, a few years ago, and the only light in the room was admitted through an aperture not more than $\frac{1}{8}$ of an inch in diameter, and I can assure you that, after a week, I could discern every article in the room, and find my way about; therefore I say the hive is not totally dark or black.

Johannesburg, S. Africa.

HONEY-DEW ON PINE

BY J. C. BALL

I am mailing under separate cover some twigs of pine covered with honey-dew that I thought might be of interest to you. The honey-dew, I think, must have been caused by a heavy frost just after a very warm spell. I am sure it is from the pines, because there are no trees near but pines, and, besides, the other trees have not budded out yet. It is very seldom that it is seen on pines about here. Some seem to think that pines never have honey-dew. This has been on the pines about a week, and the ground is well spotted with it. Sometimes it hangs in large drops on the twigs.

Kinsale, Va., April 15.

[The above letter was sent to Prof. H. A. Surface, Economic Zoologist of the Department of Agriculture, Harrisburg, Pa., whose reply follows.—Ed.]

I have received and examined the sprig of pine from J. C. Ball, Kinsale, Va., and I find considerable honey-dew upon it. I find no plant lice nor scale insects, and must say that either some insect of this kind was present on the trees above these limbs and dropped the honey-dew upon them, or this came from glandular exudations of the pine tree, which is possible. In fact, upon careful microscopic examination of the specimen at hand I must say that there is no evidence that the honey-dew originated from any other source than directly from the bark itself without the intervention of insects. Internal glands will secrete sweet liquids of this kind.

H. A. SURFACE, Economic Zoologist.
Harrisburg, Pa., April 15.

LOCATING APIARIES CLOSE TO THE MAIN SOURCE OF NECTAR

BY LOUIS H. SCHOLL

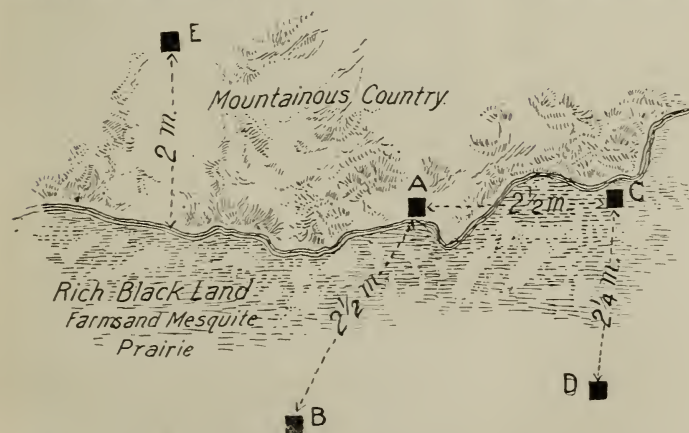
There is quite a diversity of opinion regarding the proper distance apiaries should be located from each other. I have been an advocate of smaller apiaries, located close together, for many years. My own apiaries contain 50 colonies each, and are scattered over the country, three and many two and a half miles apart. This way I get a good distribution and more evenly distributed

foraging of the bees. The loss of time caused by many bees foraging over the same ground near a large apiary, and others having to go a great distance from home, making honey-gathering less profitable, does not exist with my system.

There is considerable doubt in my mind about bees going any great distance, under ordinary circumstances, to gather nectar. The accompanying drawing of a number of my former locations may be of interest. Apiaries marked A and C are located at the edge of what we call the mountains or foot-hills. The mountainous country is suited for honey crops only in the most favorable years, and these have been far between the last few years. That made my observations of so much more value, and the evidence was the more apparent.

On the other hand, the apiaries marked B and D, in the black land farming and mesquite country, which is well suited to beekeeping, have done very well year after year, and produced good average crops. It will be noticed that these yards are only $2\frac{1}{2}$ miles from the other yards, even a little less in one, and that the distance to the edge of the foot-hills is only a little over two miles.

The two yards last mentioned outstrip the others every year, and the two yards just on the divide do not do nearly as well. It will be noticed that the distance is not great enough, it would seem, to make any material difference. Our own experience teaches us differently.



The apiary marked E, located two miles from the edge of the foot-hills, was in the mountainous country where enough forage plants for the bees abounded in this immediate locality to enable the colonies to build up to strong and even powerful colonies during the spring; but when the honey-flow came in the lower black-land country, only a few miles away, they would be on the

verge of starvation if forage was scarce nearer the apiary. We had to move this yard into the farming and mesquite land country, and since then they have done well.

If bees do go long distances to gather nectar, the yards that were located in the mountainous country should have done better than they did, especially those at the immediate edge, or on the divide. But those located away from the above territory, although only a few miles, did so much better every year that we have moved nearly all of our apiaries into this better territory, and are contemplating moving the few others also. This is pretty strong evidence, and I can vouch for its truthfulness.

New Braunfels, Tex.

REPORT OF ANNUAL CONFERENCE IN NEW ZEALAND

BY E. G. WARD

The third annual conference of the beekeepers of New Zealand was held in Wellington June 18, 19, 20, and was well attended. A number of instructive papers were read, which were contributed by leading men from all over New Zealand. The conference was fully reported, and the proceedings will be printed in pamphlet form, and will include the papers contributed. This will form a permanent record, and be of great service to absentees in that they will be able to take advantage of the ex-

periences and instructions appearing. The New Zealand government has contributed \$50.00 toward the cost, and representations were made to several of the cabinet minister which, it is confidently hoped, will result in a number of extremely useful reforms being provided for by legislation at next session of parliament. Among these are compulsory registration of apiaries; compulsory grading

of honey, and regulations dealing with carriage of bee material.

The conference was opened by the Hon. R. H. Rhodes in the absence of the prime minister, who is minister for agriculture, and who is a leading agriculturist himself. Up till the present conference the industry has been in a rather disorganized state; but a new constitution has been adopted, and it

is now hoped that matters will go on smoothly.

The previous year's report showed that the late executive had established an export honey trade, and the product is being shipped partly to England and partly to Vancouver. As the honey shipped had been government graded, the quality could be vouched for; and as only the best had been sent, the confidence of buyers would be gained as it was graded and stamped by the Agricultural Department officers.

A good deal of discussion took place as to the relative value of fostering local markets or encouraging the export trade; and opinions were fairly evenly divided between the two.

A good deal of discussion took place regarding the value of advertising to increase local consumption. Many speakers contended that, if systematic advertising were done, there would not be any need to export. On the other hand, a strong section of those present, including Mr. T. W. Kirk, Director of Orchards and Apiaries Divisions of the Agricultural Department, contended that, if the export trade were pushed forward, the local market would take care of itself. The speakers instanced the success of the dairying, meat, and fruit industry, in support of their contentions, and, if any thing, were in the majority.

The incoming executives were instructed to consider the question of co-operation, and report in six months.

At the close of the conference an address was given by Mr. Lyman, on the export of produce to the west of England. The scheme was explained fully, and keenly discussed afterward.

A number of samples of honey were sent in by beekeepers from all over New Zealand, and these were graded by the officers of the department, and a report attached. This was an education to those present; and as it is the intention of the department to issue regulations very shortly, dealing with the handling of honey from the hive right through to the bottling for home trade or packing for export, there will be much information for those interested in a concise form.

The name has been altered, and the business will be carried on along somewhat different lines than formerly; and it is believed that the new constitution will consolidate the beekeepers and include all the existing associations as well as the individuals under a large association, somewhat on the lines of the National in America. The name adopted is the National Beekeepers' Association of New Zealand. A vote of thanks to the retiring officers and honorarium to

the Secretary were passed, and the conference of beekeepers of New Zealand for 1913 closed.

Christchurch, N. Z.

MY EXPERIENCE WITH THE STEAM KNIFE AND HONEY-PUMP

BY MORLEY PETTIT,
Provincial Apiarist, Ontario, Canada.

Since the advent of the use of power for running the honey-extractor, the two most important improvements along this line that have been made are the steam uncapping-knife and the honey-pump. The steam uncapping-knife consists of an ordinary uncapping-knife with a copper jacket placed over the flat surface, with a steam hose attached near the handle, and a small hole for the exhaust at the point. A copper boiler holding about four quarts of water, placed on a coal-oil stove, supplies the steam. It has a screw cap for filling with water, and a nipple for attaching the hose from the knife. The hose is about three feet long and $\frac{1}{4}$ inch in diameter.

The first time I undertook to use this knife I had an old coal-oil stove with one flat wick; and after waiting an hour or so to get up steam I found that it would not generate pressure enough to be of any use. We then secured a blue-flame oil-stove with an asbestos wick. In operation I find that the more steam pressure we have the better results, because the hotter steam is dry, and does not cause so much drip from the point of the knife. For the best work I find that there must be a good strong jet of steam coming from the point of the knife all the time. The regular steam uncapping-knife is of the Bingham style, with the broad trowel-like blade. For my experiment I asked to have a steam-jacket placed on one of the Jones knives. When it reached me I found that the blade was shorter than I had suggested. The blade is only about $8\frac{1}{4}$ inches long whereas the Langstroth frame is $9\frac{1}{8}$ from top to bottom; and to get the best work from an uncapping-knife it must be long enough to reach clear across a Langstroth frame with at least an inch to play on for slanting the knife or giving it a sawing motion. So, although I have not had a chance to try it, I am sure I could do much better work with a steam uncapping-knife having a blade $10\frac{1}{2}$ inches long. Up to the time I tried the steam knife the best knife I had been able to secure for rapid uncapping with Langstroth frames is a knife with a straight blade about $\frac{1}{8}$ inch thick at the back, $1\frac{1}{4}$ wide, and $11\frac{1}{2}$ long from the handle. When combs are well bulged, and

the operator has a strong wrist, he can uncapp one side of a comb with one long steady stroke.

It has always been a puzzle to me why beekeepers who are anxious for just such a result in uncapping will so often reduce the width of a few thousand combs instead of adding a couple of inches to the length of two or three knives. Now, if a long blade is good in a cold knife, how much better it would be on a knife that is heated with steam! However, my experience with the steam knife teaches me that in any case a heated knife is very much better than a cold one, especially if the combs are stiff and the honey cold.

Ever since I first learned, several years ago, that some one was using a pump in connection with a power extractor for taking the honey from the extractor, I have been anxious to give it a test; but reports from those who tried pumping honey last year were not very favorable. At the convention at Amherst, Mass., in June, Mr. E. R. Root demonstrated the honey-pump sufficiently to my satisfaction to persuade me to give it a trial. He took 200 pounds of thick cold honey and pumped it from the extractor, raising it about eight feet, and conducting it about ten or twelve feet horizontally. The pump works on the rotary principle, and is connected by means of a belt with the cross-shaft of the extractor, a pulley wheel being placed on the outer end of the cross-shaft. The instructions given with the pump indicate that it is to be connected by means of a rubber hose with a special opening in the side of the extractor; but not having a tinsmith handy, and wishing to avoid cutting a hole in the extractor-can, we took a longer piece of rubber hose and brought the end of it around to the regular gate of the extractor-can, wrapping it with paper to make it fit snugly in the opening. It took considerable experimenting to get every thing to work satisfactorily. First, it seemed to me that the pump would be less in the way if it were back near the engine; so a longer piece of hose was used for conducting the honey from the gate around to the back of the extractor; but when the pump was in operation we found that the friction in the longer hose caused the honey to travel so slowly that the hose was not able to resist the suction of the pump, and collapsed, flattening out so as to interfere very much with the passage of the honey. The pump was then moved up to the front of the extractor, near the tap, and a shorter hose used. Still there was trouble because the hose was not strong enough to stand up under the air pressure; so a stronger piece of hose was

put on, and there was no more trouble from that corner. For conducting the honey from the pump to the storage-can we used about 20 feet of ordinary one-inch rubber hose, fastening it up with cords to be out of the way. We found that, when the honey was cold, the pump would not raise it to the height of nine feet and force it along through that length of pipe; but by lowering the hose to a height of about seven feet from the floor it worked very well.

Another source of trouble was the slipping of the belt on the pump; and it seems to me it would be much better in sending out a machine to the general run of beekeepers to send a pulley-wheel with flanges, which would keep the belt from coming off when the alignment and tension are not exactly right. We placed a little honey on the belt, according to directions, and found that that worked well when just the right quantity was used; but a little too much caused the belt to slip off.

The first thing in the morning we found that the honey which had been smeared on the belt the night before had collected moisture, and was so slippery that the belt and pulley-wheels had to be very thoroughly wiped dry before they would work. The honey-pump, like any other machine, requires a certain amount of attention, and is for beekeepers who are adapted to handling machinery; but neither it nor the gasoline-engine requires any more skill than the multiplicity of machines that are used in all farming operations at the present time.

The first half-day that I operated the steam-knife and pump I was able, working alone, to uncapp and extract about 1100 pounds of honey, practically all of which was cold, and mostly capped. While this was not a large record, still it was good for the first half-day with the implements.

Another suggestion would be to attach the pump direct to the engine or shafting, and not to the extractor. Having the extra load delays considerably the frequent starting of the latter after changing combs. In spite of details which need improving I would not care to handle a crop of honey without the help of the steam knife and the pump. I don't see how I ever got along all these years without either. I don't intend to be without them in the future.

The next improvement most urgently required is a hot-water jacket on the extractor, connected with the water-cooler of the engine. By using this the honey could be pumped more easily, and would strain readily through a strainer placed on the store-can.

Guelph, Ont., Canada.

[Referring to the flat-wick oil-stove as mentioned by our correspondent, we have found that it is really necessary to use a blue-flame stove in order to furnish enough steam to keep the knife hot when it is imbedded in the cold honey, as is the case when uncapping bulged comb.

If an oil-stove is used, care must be taken to see that the asbestos ring which takes the place of a wick is not covered with carbon; otherwise it is difficult to control the heat, and under such conditions the valve must be opened so wide to keep the stove burning at all that entirely too much flame strikes the boiler, with the result that the steam blows furiously from the end of the knife, and the water in the boiler is evaporated too quickly. A gasoline-burner can usually be controlled rather easier than an oil-burner. With the proper control of the heat, three quarts of water in the boiler will run the knife half a day.

There has been considerable difference of opinion in regard to the length of the blade of the knife. With combs that are bulged, there is no doubt in our mind but that a long blade is an advantage. With combs that are rather closely spaced, so that the surface is depressed in places, the shorter blade seems to be handier. We ourselves prefer a blade a trifle shorter than the width of the comb. With a sawing motion the cut is easily extended the entire width of the comb, and then when a comb is to be uncapped, the surface of which is depressed somewhat below the top-bar, the shorter blade comes in handy, for it can be tilted slightly, and works down into the depressions easily. However, much depends upon the manner of using the knife.

For best results in using a honey-pump, the shortest possible length of pipe must be used between the extractor and the pump. A long pipe creates so much friction that the honey does not run by gravity to the pump fast enough. The pump will not deliver honey to its full capacity unless the honey runs to it by gravity as fast as the pump can handle it. For this reason the pump should be a little lower than the opening into the extractor, and the tube should be as short as possible. Moreover, the tube must not show any tendency to kink, as this reduces its capacity.

A rubber hose is not to be advised for conveying the honey from the pump to the tank, for it is difficult to prevent it from kinking slightly at the points where it is supported, thus reducing the capacity of the hose and causing a back pressure on the pump.

Probably it would be better to use a flange pulley on the extractor shaft; al-

though if there is a decided tendency of the belt to slip off, the flange pulley will not overcome the difficulty, for the edge of the belt would ride the flange and in a short time ruin the belt. If the pulleys are lined up properly, and the pump located so that the belt will remain tight, there is no trouble with slipping. Occasionally a piece of old tough comb broken off, or a chip from a broken end-bar or top-bar will find its way into the suction pipe, and finally into the pump. This will cause the pump to stick momentarily, throwing off the belt. It does no good to attempt to put the belt on immediately, for it will only come off again. The pump should be worked backward a revolution or two with the hand, then forward and backward a few times until the obstruction is finally broken and carried through the pump. Great force should not be used, as there would be danger of injuring the pump. It is only occasionally that this happens.

A very little honey on the belt is all that is necessary, a drop or two at a time being sufficient. If there is any accumulation of honey on the belt and pulleys it does more harm than good, as our correspondent says. Only a great accumulation would absorb moisture from the air, and make trouble the next morning.—ED.]

Caging the Queen in a Cage of Perforated Zinc to Prevent Swarming

Dr. C. C. Miller:—In June 15th GLEANINGS you gave your method of controlling swarming. I will just tell you how I do it out here. When there is a likelihood of the bees swarming, the strongest are examined for queen-cells. If any are found they are destroyed, and the queen is caged for ten days on the top-bar in the same hive. On the tenth day make an examination for queen-cells. If any are found they are destroyed. Raise the cage and liberate the queen; ventilate the hive by raising it three or four inches off the bottom. If supers are on, ventilate by shoving one forward and the other backward so as to leave a space of $\frac{1}{4}$ or $\frac{3}{8}$ of an inch. If the queen is old, kill her and allow one of the cells to hatch; or a select cell, if any is on hand, is given. If not, instead of liberating the queen kill her and introduce a young queen.

A piece of perforated zinc is the material of which the cage is made. Bend the edges so as to bring it into a trough shape. Press it on top of a frame; raise one side about $\frac{3}{8}$; catch the queen and put her under and press down. While she is there the bees won't build any more cells unless the queen lays in them, which she can not do, being caged. That is the way it works out here. Perhaps there is a difference over on your side; but there might be some variation to make it work.

J. E. THOMPSON.

Halfway Tree, Jamaica, B. W. I., July 7.

Dr. Miller replies:

This is interesting, and much the same as things are done here. The cage is quite ingenious; but with the queen caged I should expect my bees to start cells in many if not most cases. To be sure, the queen can not lay eggs in queen-cells; but the bees can start cells with worker larvae.—C. C. MILLER.

Hheads of Grain from Different Fields

Honey from Diseased Colonies; Rendering up Foul-broody Combs

I wish you would be so kind as to give me the following information: Do you think one is liable to contaminate healthy colonies of bees by the use of supers and fixtures in the production of comb honey that have been used over colonies having American foul brood—that is, if frames, supers, and slats have been used over colonies, using new sections and starters in the supers? Do you think comb honey produced over a foul-brood colony has the germs of foul brood in them? Do you think it is necessary to char or scorch the super boards used over foul-brood colonies?

I should like information as to the best method of separating honey and wax from diseased brood-combs. I have no extractors or wax-press, but have a fruit-press.

Pittsburgh, Pa., July 30.

G. L. CRAIG.

[As a general thing it is wise to err on the safe side. Any thing that has been in contact with a diseased colony, especially combs or honey, is liable to convey the disease if it is placed over or in contact with a healthy colony. We say *liable*. We do not mean by that that it is *sure* to do so; but it has been customary on the part of producers to sell honey produced in sections or extracting-combs that came from colonies having disease. Whether the practice will be prohibited some time in the future we do not know. Honey from a foul-broody colony will not affect human beings; but the danger is right here: If the housewife or maid does not burn the sections after the combs are cut out, and if she throws those same sections into the garbage-can or into the back yard, the chances are that the bees in the vicinity will help themselves to the honey drip, and thus carry the infection to their hives.

Yes, comb honey produced over a foul-broody colony may have the germs.

It is advisable to scorch the inside of hives, supers, and super-boards, not enough to char, but just enough to blacken the wood that has come from infected colonies. Our experience has shown that such hives and hive parts may transmit bee disease. Some 25 years ago we were unable to clean up foul brood where we shook back into the same hive; but we had no trouble after the insides of those hives were scalded out or scorched out. If you have combs which are infected with foul brood they should be removed from the hives, and frames of clean foundation should be put in their place. The old combs should then be extracted, and afterward melted up in a wash-boiler containing hot water. Fork the mass out with a stick after the combs are melted. When you are through, burn the frames or subject them to a further treatment in boiling water. But we would advise you to destroy them, as the hot water has a tendency to spoil them.

The wax may be dipped off from the surface of the slumgum. But a much better way is to cut the combs out of the frames, put them in a burlap sack, and weight them down under hot water. The sack is then punched with a stick to break the combs and free the wax. But such a method of rendering is very wasteful; and if you have very much of it to do, you would save money by buying a regular wax-press. The fruit-press you have would not be heavy enough nor strong enough to squeeze the wax out of refuse comb. When wax brings from 30 to 33 cts. per lb. it is well to get as much of it as possible. If you have only four or five colonies the wash-boiler method may be good enough for the time being. But when through with the work be sure to clean every thing thoroughly; and the honey that is extracted should be sealed at once in metal or glass cans. To render it free from danger it should be heated over a slow fire for at least twenty minutes

—that is to say, it should boil for that length of time. But such boiling will generally spoil honey for purposes of marketing; and we should be afraid to give it back to the bees for fear of starting disease again.—ED.]

Some Observations upon Winter Cases and Moisture

During the discussion of a paper relating to wintering, which I had the honor of reading at the annual meeting of the New Jersey Beekeepers' Association, on Dec. 20 last, some light was thrown upon the question of how the moisture in the hive is disposed of under a sealed cover.

I assumed that the hive walls are always colder than the atmosphere in the hive, and that, consequently, moisture is certain to condense thereon; and if the wall surface is waterproofed, the water of condensation will run down and out without further harm. I also stated that water trickling from the corners of the hive entrance is sufficient evidence that things are operating in accordance with my assumption.

These propositions looked good until Mr. C. H. Root, of Red Bank, who is probably the largest practical honey-producer in the State, asserted that he "never had any water coming from his hive entrances," and then asked, "How is the moisture disposed of in such a case?" This was a poser until Dr. Phillips gave the solution by saying "the moisture is *not condensed*, but remains suspended in the atmosphere as vapor, and passes out by way of the entrance in that form, the inside of the hive being maintained at a temperature above the dew point," which is the degree at which condensation takes place.

Now, it is plain that such a condition is exceptional; but having seen Mr. Root's winter-hive cases I began to realize and appreciate their value and effectiveness. They are certainly more effective than any double-walled hive so far brought forward.

In the matter of winter protection, first cost may decide what method to adopt; but within reasonable limits it may be wiser to consider effectiveness in the long run as an offset to first cost. I can not state the cost of these cases; but it must be considerable. They, however, last for years, and render full value every season. Mr. Root stated that he may lose in winter one, two, or three colonies among the 300, more or less, which he has. This is certainly a most remarkable record, and no stronger endorsement of his method could be desired.

A somewhat similar winter case was described and illustrated in GLEANINGS for Jan. 15, 1908. Briefly described, Mr. Root's case is made 4 to 6 inches deeper than a hive-body, and without top or bottom. It has double walls four to five inches thick, outside measure, and is packed with planer chips or sawdust. It telescopes down around the hive-body closely, and rests upon the hive-stand. When so placed the vacant space above the sealed cover on the brood-nest is packed full of leaves, and a regular hive-cover is put on. Suitable provision is made in the case for the entrance. During the summer these cases are stacked up out of the way, with a hive-cover on top.

The advantage of such winter cases lies in the fact of keeping the hive so very warm that positively no moisture condenses anywhere, and consequently no harm is done. Everything considered, it appears there is in winter never any danger of keeping the bees too warm out of doors. Then there is the other advantage that there is no heavy or clumsy encumbrance of the hive as with the permanent packed double hive. Having operated a season with hives having double walls 2 to 3½ inches thick, I appreciate the greater convenience of the single-walled

body, which can be exchanged or reversed, and used either as brood-nest or super without the necessity of transferring frames.

Where lumber is cheap, and the beekeeper is handy at woodworking, these cases would be less expensive; and, once provided, would be always ready for winter preparations with the least fuss.

Bees, in the hive where conditions are comfortable and agreeable, will not fly out when the sun shines if the temperature is not right. On the other hand, if there is no effectual arrangement for keeping the hive so warm and so comfortable, then things are different, and dampness must be reckoned with.

New Jersey.

C. D. C.

Visit of Dr. Phillips to Porto Rico; 1000 Pounds from One Colony

The readers of GLEANINGS, perhaps, would like a message from Porto Rico. The most important event which has taken place in our life as apiculturists has been Dr. Phillips' visit to this island. He landed on the 29th of May, and was the guest of my good friend Mr. Van Dine, entomologist of the experimental station of the Association of Sugar Producers of Porto Rico.

On the following Sunday he visited my apiary, and spent a few hours in my home. He questioned me, among other things, about the production of honey, and was much surprised when I told him that the average output per colony was from 240 to 300 lbs., but he was able fully to realize the truth of my statement during his visit round the island, when at one of the many fine apiaries he was told by the owner, Mr. Mejia, that one colony had produced 1000 lbs. of honey. What do you think of that?

On his return there was a conference in the assembly hall of the University of Porto Rico, which was well attended. Limelight pictures were used. Dr. Phillips thinks that this is an ideal place for beekeeping, as we have no bee diseases of any kind. But one great obstacle in the way of beekeepers is ignorant competition; and as a proof of what I say I shall cite the fact that, in the city of Ponce, when the town council gave orders that all hives were to be taken out of town, one thousand colonies belonging to different owners were moved. This island is very small and densely populated; and if the bee fever continues as it has begun, Porto Rico will soon be overstocked with bees.

V. A. TEXERA.

Rio Piedras, Porto Rico, June 27.

A Woman who would Rather Work with Bees than to go to Pink Teas

I now have 24 colonies in the cellar, and do all the work myself except putting them in and taking them out, when my little girls help. It is a rather awkward job, as we have no way of getting them in except down through a very small trapdoor in the floor. We accomplish it, however, by taking away the stair steps and letting the hive down by ropes attached to the four corners of a box end of the right size. We take them up the same way without the assistance of a man at all.

I love every branch of the work (with the exception of wiring frames). Can't some man devise a way that is easier than that? The carpenter work I like very much, and I have always regretted not being a boy, for the reason that girls can not very well be carpenters. Nailing up hives and frames satisfies the longing. It is clean work handling and putting together the fresh beautifully cut wood.

I can truthfully say that nothing in beekeeping is impossible to a determined woman except, perhaps, climbing a tall tree, which is the only time I ever need the assistance of the men, and that is not very often, as I clip the queens. Never shall I for-

get the first one I found after two or three days of searching in a very populous colony. My fingers trembled so that I was afraid I should squeeze her and kill her before the wing was clipped.

I have found that beekeeping is an ideal occupation for women, as they must be so much in the open air. Some of the work is heavy, of course; but one can do it. I weighed only 101 pounds three years ago, when I first got my bees; but I now weigh 120, and am not nearly so nervous and weak. Manitoba has a very short honey-flow, as we can not put the bees out till May 1; but most years there is a very good crop from the wild clover and other flowers. Two years ago I dedicated one of my eight colonies to the church to help pay the minister's salary. That hive gave me four supers of one-pound sections. It was a good one; but some of the others did almost as well.

The summer months here are so very hot that we have a great deal of swarming; and as our present cellar will not accommodate more than 25 colonies (by tight squeezing at that), could some person tell me a plan to keep them down to that number? Could I unite them some way? After practicing the shak-en-swarm plan I shall have 48 or more. As they sometimes cast a swarm from the new one away on in August, I wish to keep all the bees.

I would rather have a swarm than attend the pinkest of pink teas or go to a ball, and I am very fond of society too. MRS. Y. N. WESGATE.

Portage la Prairie, Manitoba, Can., July 4.

[By shaking the second time, after three weeks, you get the rest of the bees in the parent colony into the new hive with the swarm. In this way you can keep down increase if you desire.—ED.]

Smashed Combs in a Bee Tree

About ten days ago I cut a bee-tree on my farm three miles from Hicksville. This colony contained a million bees and a barrel of honey. It filled the hollow in an oak for a distance of nearly six feet, and the diameter inside is 14 inches. We cut out the log and found the combs at both ends in good condition. We nailed it up and hauled it on some hay bedding to Hicksville, where, with great triumph, we set it up. The first day after, there seemed to be a large number of bees; but on the days following they were very quiet, and honey began to run out at the bottom of the "gum" as we call a hollow tree out here in the woods. Two days ago we took it down and sawed off a piece from the upper end, where we found every thing all right. When we opened the lower end we found it a mass of smashed comb and dead bees. We dug out two bushels of comb loaded with honey. We left a foot of the comb in the upper end, which is intact, but has a little honey. I found no eggs in the empty comb. I feel quite sure that the queen perished.

Hicksville, Ohio, July 21.

J. H. DIEBEL.

[From the general description given in your letter of July 21 it is evident that the combs broke down in the lower portion of the log hive probably during the time that you moved it. When you set it up these smashed combs fell down upon the bees, killed the brood and bees, and finally the honey began to run out at the bottom, as you describe. It is not at all certain that you have killed the queen, but there is a possibility that this may be the case.—ED.]

New Zealand Beekeepers Organize Under a New Constitution

The beekeepers of New Zealand have organized under a new constitution. The meeting was attended by nearly all of our leading beekeepers—some 7000 colonies were represented by their owners. The general feeling is that it was good to be there.

Wellington, N. Z., June 20.

R. N. BRIKELE.

Our Homes

A. I. Root

Cast thy bread upon the waters; for thou shalt find it after many days.—Ecc. 11:1.

WATER FOR BEES WHILE BEING SHIPPED BY MAIL AND EXPRESS.

Almost as soon as GLEANINGS was started, in 1873, I began planning for the shipment of queen-bees by mail; and I declared that a good serviceable queen should be sent by mail postpaid for an even dollar. But just as the new industry had begun to assume considerable proportions, owing probably to the work of careless beekeepers queens were ruled out of the mails by the Postoffice Department. Our good friend Prof. A. J. Cook, then of the Michigan Agricultural College, made a trip to Washington and interviewed the President, telling him of the importance of bee culture to the world, and the result was that queens were again permitted to go by mail. However, before traffic was once more restored a quantity of queens piled up on my hands, and I was for a time in a predicament.

With the above preface you will readily catch on to the following, which we reprint from GLEANINGS for September, 1878—35 years ago:

HOW TO KEEP EXTRA QUEENS ALMOST ANY LENGTH OF TIME; ALSO HOW TO GET OUT OF TROUBLE OF ANY KIND.

About the time queens were thrown out of the mails I was really in trouble—not for myself alone, but on account of the many that were sending me queens, and who were, perhaps, less able to stand the loss than myself. As soon as the order was received we dispatched postals to everybody who had been sending us queens, but for all that they kept coming. Day after day had I said, “Well, I really can not think we shall have any more; so keep up your courage, boys, and keep on dividing and making room for them.” We did so, but more kept coming. Hayhurst had just sent us a package of 25 or 30; Henderson had sent as many more; then Moore, of Atlanta, Ga., came in with a fine lot; and, besides the above by express, a lot of the A B C class were just getting the hang of the business, and they swarmed in at every mail, with their queer cages but nice bright queens until I almost began to be sorry I had ever taught them how to raise queens. Some of those that had been notified kept sending them in, saying they had nice queen-cells just hatching, and they must put the queens somewhere, and they thought I *sure* could get along with a few more.

One evening toward the first of August

our friend Charlie came in with another great bundle of queen-cages; and as I thought of the queens spread all around in the honey-house with every thing that we could think of given them, just to make them hold on to life a little longer, I am afraid I got into one of my ugly moods. It is nothing very strange, for I do have such moods, and am afraid I always shall, now and then. Said a bad “impulse,”

“Of course that fellow had received your postal card, and knew better than to send you those queens. I would send ’em right back, and let him bear the expense, to see how he likes it.”

But a better impulse said, “Steady, my boy; you are perhaps better able to take the shock of this event than many of your pupils, and you have no right to assume that they had received your notice. You have often said that calamities were sent on purpose to teach us useful lessons. Had you not better brighten up and grasp the situation squarely, and see what the lesson is that is to be learned?”

As I mused, I got into a better mood, and went upstairs around into the wax-room. The hands were all gone for the night, and it was still and quiet. I remembered how Mueller had asked God for every thing he needed for his work among the people, and it occurred to me that it could not be a wrong act to kneel down there and ask my heavenly Father to help me to be a better friend to those who entrusted their queens to me, and to ask him to tell me what to do with them, not only for my sake, but for the sake of all these bee friends all over the land. I did so, and after that I never borrowed any more trouble as to what I should do with the queens. I did not know at once what was to be done, but I felt as if some “old hand” were going to tell me just what to do, and so I looked cheerful.

I suppose I began to give the matter earnest study; but it seemed as if some one talked to me something as follows: The queen and bees, to stand long confinement in small quarters, must have clean, pure, fresh food. The honey that is used to soak the sponges often acquires a musty or sour smell in hot weather, and the bodies of the bees that come the longest journeys are often distended, especially after they begin to die badly. The candy made with flour answers nicely when first made, but after it gets dry and hard, the bees have nothing wherewith to moisten it, and so they die,

as you have so often seen. Cages prepared with fresh candy every day you send out bees might do, but this would be well nigh impracticable; for the cages could not well be used again, and those kept in stock or sold would endanger the lives of the queens, unless they were used at once. Honey mixed with the candy, although it answers well for short voyages, will never do for California and Texas, and the bees fed with it often have distended bodies, even when sent but short distances. Hayhurst's queens seem brightest and most natural, and his cages are probably filled a few at a time, and just before they are sent off. The experiments made with coffee or loaf sugar, years ago when the dysentery prevailed, seemed to indicate that it is a sure remedy for the distended bodies, and that as a diet it is more wholesome than honey. How shall we keep the candy from getting dry? Wetting it, just before being sent out, often daubs the bees, and answers for but a short time, even then. Putting in a sponge filled with water does better, but that will get dry and hard, even while coming from the Southern States, to say nothing of crossing the great dry deserts on the way to California. Some plan to enable the bees themselves to mix the sugar and water daily just as they need it, is what is wanted; can this be done? My mind wandered on a glass honeycomb; but the motion of the cars would shake the water all out. I thought of a large glass bead, with the water held in by capillary attraction; and, finally, I went into the drugstore and asked for some very small vials. They were out of half-dram, but had dram vials. I thought these too large, but finally took some, and soon had one filled with water with a groove cut in one side of the cork, that would just let a bee get his tongue in. It was placed over a ten-cent candy-cage, as shown in the right-hand cut below.*

As soon as I got it nicely fixed a friend sent three hybrids by mail. Although they had had a long journey, and one bee was dead already, they were given a bottle each and placed back of the typewriter. They found the orifice in the cork almost at once, and were very soon scampering about in the cage as lively as could be. They have been now caged in the same way ten days, and are as brisk and lively as one could desire. After it was settled that water and candy was all they needed (and I was surprised to find that a dozen bees would consume a dram of water in about ten days), the problem was how to fasten the bottle in the cage for shipment, so that it could

never shake loose, and yet so that it could be taken out to be filled. Our friend Will, who handles the queens, solved this problem by pushing a pin through the end of the cage and through the cork of the bottle, as seen in the cut at the left. The cage is represented with the wire cloth removed, to show the position of the bottle. The other end of the bottle is fastened by a pin set over it. As soon as it seemed to be a success, all the queens, both blacks and hybrids, of which we have a great quantity that have been shipped and stopped because no one will pay the express charges on them, were supplied with bottles of water, and not one has died since, where they had any kind of chance. They have been sent out daily, by express, sometimes as many as 20 or more a day, but not one failure has yet been reported. In one of the larger cages where the bees have been caged over a week, the bees clustered precisely as in comb-building; their bodies are small and natural, and yet they have consumed quite a large quantity of candy or sugar, and have had no fly at all.

Many of you have lost queens while caged and lying on the frames. Sometimes it was hard to explain why they died. We now introduce all our queens in these bottle cages, and have not yet lost one in them. One imported queen was lost; but, when examined, it was found that a cage had been used, by mistake, without any bottle in it. For sending bees across the ocean I would use cages with two bottles in them, placed with their mouths in opposite directions. If the cage should stand on end, so that the water was not near the mouth in one of the bottles, the other one would be just right. It makes me shiver to think of the poor bees I have probably consigned to death by thirst during these long summer days, simply because I knew no better. Hereafter the little fellows shall have all the water they wish; and if my invention should be of any use to the bee friends of our land, give God the praise, for it was given me in answer to prayer. A brisk trade is now starting up by express, and I shall probably soon want all the queens you can raise, if it be really true that we are to have no more losses in handling these wonderful little friends of ours.

Aug. 8, 1878.—The three hybrid queens have now been in the bottle cages 11 days, and are as lively as at first. To be sure that they had nothing but candy and water, I wrote to the friend that sent them, asking how he made the candy. This is his reply:

* As the cut referred to is not readily available at this late date, and as it is not specially important, we omit it.

The way I make my candy is this: I put coffee A sugar in a new tin cup, and add water until, by mixing or stirring it with a paddle, every particle

is wet. I then set it over a stove and heat until every particle of sugar is dissolved. When it is thoroughly melted or dissolved, remove from the stove and keep stirring it until it begins to cool or grain, then put it in the cages. M. G. KEENEY.

Quercus Grove, Ind., Aug. 6, 1878.

Aug. 12.—It is now over three weeks since the hybrid queens were imprisoned on the water and candy, and still they are alive and brisk. A few of the bees have died, but this length of time would suffice for a journey to California and almost across the ocean. As the bees in one of the cages seemed disposed to cluster as bees do in building comb, I have had a cage made of one of our section boxes, and supplied with sugar and a bottle of water in the same way. About 200 bees were put in, and the miniature hive stands beside my typewriter. Somewhat to my surprise, they commenced comb-building at once, and show no signs of wanting to get out. Perhaps we may get out an observatory hive for a parlor ornament, to allow the bees to fly, or not to fly, as we choose. Instead of glass, which is generally used, I would have the sides of a coarse-mesh painted wire cloth. This seems to annoy them so little that they do not act as if confined.

Aug. 25, 1913—35 years later:

I want you to notice particularly the second heading—"How to Get out of Trouble of any Kind." The above article came to mind just now because of the success our company is having by the use of water for shipment, not only by mail but by express, especially during the hot months of June, July, and August. At the time I made the discovery that the lack of water was the "missing link." I had copies of the above articles printed and sent out as advance sheets to the large number of friends who had been engaged in raising dollar queens, and I confess I was a good deal disappointed and perplexed to find this matter of water-bottles was for a time dropped, not only by other shippers, but by The A. I. Root Co. I still felt, however, that it *was* in direct answer to prayer; and when the matter came up again, 35 years afterward, I thanked God, because, after all these years have passed, it transpires that I was then *exactly right*. Ernest has told you elsewhere what wonderful success we are having, not only in mailing queens but in shipping bees by the pound all over the country. In giving place to the above, printed 35 years ago, I have been wondering how many of those whose names are there mentioned are still alive and keeping bees.

Later.—After having dictated the above, Ernest reminds me that we stopped using water in queen-cages because we found the "Good candy" answered so well that, by

general consent, the somewhat expensive and troublesome water-bottles were omitted. If the Good candy is freshly made, say the day the queen is sent off, and the distance is not too great, there is generally sufficient moisture, depending largely, of course, on the locality and the state of the weather. But for long shipments, and especially with bees by the half-pound or pound, or more, during hot sultry weather, water in some form, and in considerable quantities, according to the number of bees, seems *now* to be almost an *absolute necessity*. Let me refer again to that quotation of 35 years ago:

"HOW TO GET OUT OF TROUBLE OF ANY KIND."

The above indicates that 35 years ago I was getting into the habit (like George Mueller) of going to the great Father with all my troubles. Now, I am not sure that I have followed this up all through the past since that time; but whenever any real trouble has confronted me or mine, I believe I speak truly when I say that, sooner or later, I got off by myself and told the dear Savior all about it. A good many times what he pointed out looked difficult and hard; but when I followed the dictates of that "still small voice," peace, comfort, and happiness came. On page 467, July 1, a suggestion is made that I "ought to do an immense amount of good," if I have access, in the way I have described, to divine help in all emergencies. Without any desire to boast, let me submit the matter to my readers. Has not our journal, in the years that are past, to use that writer's own expression, done "an immense amount of good" to the world? If so, as I said 35 years ago, give God the praise.

A visitor called on us yesterday who is interested in growing alfalfa. He said a friend of his out west has secured this season 90,000 lbs. of honey. Bee culture alone has made great strides, and for this we are devoutly thankful; and if our journal has been also the means of helping righteousness, temperance, and purity to make tremendous strides I shall be more thankful still. Give God the praise. To go back to our opening text, let us not be afraid nor get weary in continuing to cast our bread on the waters of humanity. And let us remember the promise that we shall "find it after many days."

THAT "GREAT UNEXPLORED REGION."

The *Sunday School Times* for June 28 has been kind enough to comment as follows on my Home papers for June 1 and July 1:

We are liable to know some truths better by hearsay than by personal experience. A man who had

been exasperatingly annoyed by some town boys turned on them unexpectedly one day with a look so pleasant that they were quite taken aback. Then he spoke to them pleasantly. And then they stopped bothering him. Commenting on his own experience he said that "Returning good for evil is a great unexplored region." Yet most of us have opportunities for starting on an exploring expedition in that region almost any day. Suppose we investigate.

While reading the above it occurs to me that some of the meanest men I ever came

across have been redeemed and transformed by showing them kindness, and that you have not only forgiven but forgotten some past unpleasantness. I have seen such men made over. But right now, while I dictate, my conscience troubles me for using the term *mean* man. They used to be what the world calls "mean" and hard to get along with, but they have been transformed by the Christlike spirit.

High-pressure Gardening

HYBRIDS—THEIR SUPERIORITY THROUGHOUT BOTH THE ANIMAL AND VEGETABLE KINGDOMS, MANY TIMES, TO EITHER PARENT; SOMETHING ABOUT TOMATOES.

I have frequently mentioned my chickens in Florida that are a cross between the Buttercups and the White Leghorns. I made this cross, for one thing, to see if I could secure in this way more pullets than roosters. I also expected to get a better strain of layers and hardier chickens; and I think I have succeeded at least pretty well. Now, a very good friend of mine, Mr. E. C. Green, formerly of the Ohio Experiment Station, has made it his business for many years not only to test different varieties of tomatoes but to test crosses made from these varieties; and he has given the vegetable world, through the agency of our good friend W. Atlee Burpee, several of the very best tomatoes now grown. Well, last April, almost as soon as I arrived at Medina I went to our greenhouse and got six potted tomato-plants. Mrs. Root said that six would be ample for our small family. About two weeks after, I met our friend Green and he told me he would like to have me try a few plants of the new hybrids which he has been getting out. He brought me six, not potted, but just taken from the seed-bed. So we have twelve plants instead of six for our family. You may remember we had some severe frosts along the middle of May, and it was rather tough on the tomato-plants. It would have killed them all, no doubt, had I not covered them with pails and some boxes. I knew wooden pails would be better than metal; but not having enough to go around, I used one tin pail over one of the hybrid plants. The frost froze it down to the ground. The rest came out all right. But this one plant put out a sprout down close to the ground, and quickly caught up, or nearly caught up, with the rest. After the frost we had a week or two of cold winds and bad wet weather. The tomatoes all looked so sick that I did not expect much of them, but I began

to notice right away that the new hybrids seemed to be hardier than the pot-grown plants from the greenhouse. Well, these hybrids, although put out in the open ground two weeks later, bore the first ripe fruit. A little later Mrs. Root asked me if there were not some more tomatoes, and I told her I hardly thought there were. But I went out with a tin pan, got it full, and pulled off my cap and got that heaping full of great smooth purple beauties. I was surprised to find some of the handsomest had ripened up and commenced to crack open when they had been under foliage clear out of sight. This proved, as you may readily believe, one of my "happy surprises." I hastened down to my friend Green, and found he had pretty nearly half an acre of just such plants. Said I, "Friend Green, you are going to save a lot of seed from these nice tomatoes, of course?"

"Why, Mr. Root, I can not do it. These plants and the ones you have are the result of hand-pollination. In order to get this strain of tomatoes I was obliged to take the pollen from the Earliana and cross it with the pollen on the blossom of a Potato-leaf tomato, or something similar to the Potato-leaf. Now, this first cross, as you have noticed, is certainly superior to either parent; but if I save seed from these hybrids I shall have a mixed-up mess and nothing like the parent. This matter is pretty well recognized at our experiment stations, and is fully discussed in a bulletin I will lend you. The title is 'Bulletin No. 346 of the Experiment Station, Oneida, N. Y. Influence of Crossing in Increasing the Yield of Tomatoes.' Now you see that all of us who are growing tomato seed are up against an obstacle. This precious seed is obtained only by what is called hand-pollination."

Mr. Green here took his knife and showed just how he did it. He got some pollen on the point of the blade from one variety, and carried it directly to the blossom of another, and the fruit has to be watched

and taken from each blossom thus treated. The consequence is, such seed as this, every one grants, is superior, but it would cost too much in the item of labor alone to be sold at any thing like usual prices. He said he might be able to produce it for \$5.00 an ounce, or in small packets he might furnish 50 seeds for a dime. Now, I should be glad to pay a cent apiece for what seeds I need in order to get such plants as these I am describing. First, it is the earliest tomato I ever got hold of; second, it is almost of as good a shape as the well-known "Beauty" tomato; third, it is the most prolific of any thing I ever saw. Our tomatoes from these plants lay in heaps. They were literally piled up all around each one of the six plants. In the fourth place, it is about the hardiest tomato to stand frost and cold winds of any tomato I have ever had. And this, you know, is characteristic of hybrids, plants as well as animals. My hybrid Leghorn Buttercup chickens are certainly hardier, more robust, and a little larger, than either parent. But the hybrids seldom if ever reproduce themselves exactly in the offspring. Poultrymen and seedsmen can explain this matter much better than I can. It has been discussed over and over again in regard to bees for half a century. The general agreement is, if I am correct, that the first cross between Italians and common bees will gather more honey than either of the parent races.

I persuaded friend Green to agree to furnish about 50 seeds of this hybrid tomato to the readers of GLEANINGS for ten cents. He will have the seed ready in a few days.

Of course the plant may be reproduced by cuttings instead of seeds; and I am planning now to raise a few nice plants from cuttings to carry with me when I go down to Florida in November.

THE NEW CELERY CULTURE.

A dozen years ago or more our good friend Greiner, who writes for our agricultural press, devised a new plan of growing celery in a back yard or garden, which he called the "new celery culture;" and he put out a book describing his new high-pressure gardening. We sold quite a few of them. Some people succeeded, while others, as usual, did not. But the book was well worth the 25 cents it cost.* It seems now that, after all these years, somebody has decided he could get some "dollars" by calling the idea something new. Read the following letter:

*The whole thing is now embodied, with ample illustrations, in Greiner's book, "Celery for Profit," which we have advertised and sold for many years for only 25 cents.

Mr. A. I. Root:—I am a short-term subscriber to GLEANINGS. I have a copy of your book, "What to Do and how to be Happy while Doing it." It was lent me by a neighbor. I read your articles in GLEANINGS under the head of High-pressure Gardening. I send you a clipping from *Suburban Life*. Do you know any thing of the book spoken of in the advertisement? Is it worth the price to a market gardener of limited means? It says \$50 from 5½ x 5½ yards, method simple, results sure. Do you think these statements are facts?

Gouverneur, N. Y., Aug. 4. W. G. BRAINARD.

Below is the advertisement our friend refers to:

NEW CELERY CULTURE; A LIVING FROM ONE-EIGHTH ACRE.

Nearly eleven hundred finest celery-plants may be easily grown on a rod square of land. At five cents per stalk, that means over \$50 from 5½ x 5½ yards. Two crops in one season. This new under-feed method grows extra-choice, crisp, and tender celery in eight weeks from planting. A fortune in your back lot. Method simple. Results sure. A boy can do it. Complete instructions, \$1.00. Free copies to Agricultural Colleges.

Montvale, Va.

MONTVALE FARMS.

As soon as I saw it I sent off a dollar; and what do you suppose I received? No book at all—just a single sheet of paper. It made me think of "The Natural Hen Incubator" that I have shown up several times. All there is on this single sheet of paper could easily be printed on two pages of GLEANINGS. You are simply to make a hot-bed and then put two loads of manure on a space 8 x 16 feet. This would be about the quantity of manure that market gardeners generally use for a hot-bed. Put a frame of boards on top of the manure and fill up with good rich soil. The author recommends poultry manure as one of the best things to make the soil rich. The plants are to be set out six inches each way. The bleaching is done by having the plants so close together (on very rich ground) that they bleach themselves, aided by tying up with a string. It is exactly the plan Greiner described in his book. Of course the ground is to be made very rich for this intensive cropping; and then you must keep it well watered if it does not rain. All this can be managed very well if one will take the time and pains. He says you can grow two crops of celery in one season; but I fail to see how two crops of celery are going to afford "a living from an eighth of an acre." You will notice there is no signature to the leaflet except the address, White Plume Celery Farm, Roanoke, Va.

I am going to submit the whole thing to the attention of the Postoffice Department.

SQUASH-BUGS AND—HOE-CAKES.

Dear Mr. Root:—I have just been reading your papers in GLEANINGS, and notice your article on moth-balls for squash-bugs, etc. I presume, of course, you have reference to the small striped beetle so destructive to young vines of squash, cucumber, etc. The remedy referred to may do the business all

right; and yet the one I wish to give you may go a little further toward reducing the high cost of living; besides, it is always on hand on the farm whenever wanted. It is as follows. Take an old bucket and fill it about one-fourth full of fresh cow manure. Fill with water, and stir. Apply direct to the plants. I generally apply by means of a bunch of tall weeds, which I take by the root ends, immerse the tops in the decoction, and shake over each hill. I have used nothing else for the last ten or fifteen years, and it has never failed to do the work to perfection. It is the smell that drives the bugs away.

As to Vice-president Marshall's hoe-cake to which you refer on another page, I think it is nothing more nor less than our corn bread, sometimes called hoe-cake from the fact that in earlier days the Southerners made a batter or dough, the main ingredient of which was Indian meal, which was spread on a hoe or similar instrument, and laid on an open fire to bake. This was called hoe-cake.

Berne, Ind., July 6.

M. BRENNEMAN.

Perhaps some of the friends may complain that our good friend Brenneman and myself are getting different things into rather close proximity; but you can stop a little and take breath after reading about the remedies for squash-bugs before you tackle hoe-cake. Yes, the remedy proposed will do the business. I have heard of it before, but had forgotten it. The only objection that we know of is that it is a rather disagreeable operation; but from the fact that it gives the squashes a fertilizer—that is, if you give them a good dose of the concoction, and at the same time it drives the bugs away—I think we can extend a vote of thanks to our good friend. Now for the other matter.

Very likely it is "corn bread" that Vice-president Marshall eats every day of his life. But where does he get it? Is such corn bread kept for sale by the bakers? If so, I have not seen it, and I generally make friends with the bakers wherever I am, and look over their stocks, especially the goods they furnish to "reduce the high cost of living." Can not somebody furnish us a recipe for making such bread as Vice-president Marshall eats "every day"? Corn meal is as cheap as common flour, and perhaps cheaper. Will friend B. kindly tell us how to make good wholesome bread out of golden corn?

THE DASHEEN, AND THE WORLD-WIDE DISTRIBUTION OF FOOD PLANTS RELATED TO IT.

The following, from our good friend Dr. E. F. Phillips, of the Bureau of Entomology, Washington, explains itself:

UNITED STATES DEPARTMENT OF AGRICULTURE.
Washington, D. C., July 29.

My Dear Mr. Root:—I am enclosing two quotations from Cook and Collins' Economic Plants of Porto Rico on "yautias," the Porto Rican name of the dasheen.

I saw a dasheen growing in a store window here to-day.

Sincerely yours,

E. F. PHILLIPS,

In Charge Bee Culture Investigations.

P. S.—Bulletin 6 of the Porto Rico Agricultural Experiment Station (Mayaguez, P. R.) is on yautias, or taniens, of Porto Rico. I think the Hawaiian station (Honolulu) also has one on taros as they are called there.

E. F. P.

1903. Economic Plants of Porto Rico. U. S. National Herbarium. Vol. III., part 2, p. 264. *Xanthosoma*. *Yautia*.

Family *Araceae*.—In Porto Rico there are four kinds of taros, or "yautias," as they are there called. Three of them are species of *Xanthosoma*, a genus of aroids closely related to *Colocasia*, but having the leaves hastate—that is, the basal lobes are not connected behind the insertion of the stalk, as in *Colocasia*. The species of *Xanthosoma* are recognized as distinctively West Indian, and were cultivated by the Caribs when the Spaniards arrived; but, curiously enough, the taro is the only one which has retained a thoroughly native name. The *Xanthosomas* are known, respectively, as "yautia blanca," "yautia amarilla," and "yautia palma," while the taro is called "yautia malanga." *Colocasia esculenta*. Taro. Yauti malanga. Bleeding heart.

Family *Araceae*; the "taro" of Polynesia. Elsewhere about the Caribbean Sea the same plant has a most confusing variety of native names—"coco" in Jamaica; "eddo" in Barbados; "tannia" in Trinidad; "taya" in the French Islands; "oto" on the Isthmus of Panama, and "tisquisquis" Nicaragua. European travelers and residents are commonly not aware of the differences between these closely similar plants, and generally apply these names indiscriminately to both *Colocasia* and *Xanthosoma*, and some botanists have even failed to appreciate the differences.

The species of *Colocasia* can be distinguished from those of *Xanthosoma* by the peltate leaves.

Mr. W. M. Armstrong, of Honolulu, states that he found the Porto Rican taro, or yautia, invariably inferior to the Hawaiian, the introduction of which he considers would be an important service for the agricultural population of Porto Rico. Stock should be secured from Hilo through the experiment-station authorities.

Mr. Armstrong also states that the Hawaiian taro has been found superior to that of Fiji and Samoa by Mr. Alexander, who has investigated the subject. Its wholesome and delicate quality recommend it to resident Americans, and many who have returned to California now import taro for household use.

Recently the Chinese have taken to raising another variety of taro, or taro-like plant, in California, particularly at Bakersfield. This is said to be propagated from tuberous lateral shoots, not like the taro in which the leafy cut-off ends are planted. Chinese taro is also imported to California from Canton and Hongkong. This is by some thought to be somewhat inferior to the Hawaiian, but the difference is not great.

Our readers will notice that the quotations are from a book put out in 1903; and probably considerable progress has been made in disseminating this vegetable, especially in California. If any of our readers can give us any additional information we should be glad to get it.

You will notice the statement that all of these plants are closely related to *Colocasia*; and when foliage plants were my hobby some years ago the varieties of *Colocasia*, especially the variegated ones, were an endless source of pleasure to me. But I did not succeed in making them grow, especially outdoors, as I am now succeeding with the dasheen.

Temperance

"CREATING AN APPETITE."

I want you to take a look at the picture of that boy on page 564 of our issue for August 1. May be you think our boys are not very often taught to drink. If so, look at the following, which I clip from the *American Advance*:

SCHOOL-CHILDREN DRUNK!

Yes, in our land of light and protection for the home!

Read the details in this bit of item from the daily press. It was printed at the bottom of an out-of-the-way column:

81 PUPILS GET DRUNK; PASSAIC SCHOOL REPORT SHOCKS OFFICIALS.

PASSAIC, N. J., July 13.—Mayor George N. Seger, of Passaic, received the annual report of Truant Officer Herman Weber yesterday. Casually he ran his eye down the list of absentees, the list of sick, until he came to a line near the bottom of the page. Then he leaped from his chair and rang the bell violently.

"Send for Mr. Weber at once to explain this," he fairly gasped. "I never heard of such a thing!"

The line of the report that had excited the mayor reads as follows: "Total number of school-children intoxicated during the year, 81."

Mr. Weber, when he appeared, explained that all these children had come to school, at one time or another, drowsy and inattentive, some of them boisterous and quarrelsome, and each case investigated had established the fact that they were under the influence of liquor.

The mayor has issued orders that in the future each case of intoxication among school-children shall be made the subject of a special report and a careful investigation. Among other facts to be noted are the nationality and social standing of the parents, and, if possible, whether the child was given the intoxicant at home.

Of course, we do not know how many pupils there were in that school; but during the year there were 81 that *got drunk*. Without question these children were taught to drink just that the greedy liquor-dealers might get their nickels. Notwithstanding such reports as this, the liquor power has got its hellish grasp so firmly on the affairs of our government that all the good people in all the whole wide world, up to the present time, have been totally unable to break its clutches on our administration.

GOD'S KINGDOM COMING; THE WAY IN WHICH
WOMEN ARE VOTING IN ILLINOIS TO
BANISH AND KEEP OUT THE
SALOON.

We copy the following from the *Union Signal* because it shows in detail *how* the women went to work, and what they accomplished in one Illinois city:

ILLINOIS WOMEN VOTE ON THE SALOON PROPOSITION.
ETTA KOOT EDWARDS,

Vice-president Illinois W. C. T. U.

The first test in Illinois of women's sentiment regarding saloons was made in Benton, July 22. Benton, a city of about 5000 people, is the county-seat of Franklin County. It has had no saloons for five years. This spring, under the commission form of government, a license ordinance was introduced.

The vote stood three for and three against. The mayor referred the matter to the people. So the ballot read, "Shall the ordinance for licensing dram-shops be passed?"

The Women's Christian Temperance Union assumed the responsibility of getting the women to the polls. Mrs. Mary Hart, wife of former County Judge Hart, was made chairman of the central committee. She chose one woman from each ward to act with her in polling the city. The local president, Mrs. Hudgins, then called for volunteers to make a house-to-house canvass, and fifty-six women responded. Each ward was divided into sections, and two women were assigned to each section. A day was decided upon for a whirlwind canvass, and practically every home in the city was visited that day. The canvassers took with them sample ballots from which they showed the women how to vote; some good literature, which they left in the home, and a notebook in which was recorded the name and address of each voter, how she would vote, and when to call for her. These facts were tabulated, and the names arranged alphabetically on separate sheets, ready for use on election day.

The day came. The committee was at the polls half an hour before the time for opening. The first woman who voted was Mrs. Margaret Martin, seventy-seven years old, and for fifty years a resident of Benton. Ten automobiles had been gratuitously placed at the disposal of the committee.

The chivalry of the splendid men of Benton can not be excelled. Ministers, lawyers, business men, city and county officials, clerks and judges, vied with each other in acts of courtesy and kindness.

What was the result? Four hundred and twenty-two women voted. Four hundred and eight of them voted against the saloon. The total vote was 836, and the dry majority was 526.

Judge Hart said, "I have been here for twenty-five years, and I have never seen things so quiet and orderly on election day."

Benton's sweeping victory has sent a thrill of confidence into the hearts of good people throughout this entire section.

There you have it, friends. If you are working and praying to have your town, county, or State dry, and to keep it dry, are you willing to take the time and trouble, to work as did those devoted women?

TAKING THE BABY TO THE POLLS TO VOTE;
AND ALSO TAKING THE BABY WHEN A
WOMAN IS CALLED ON TO SIT ON
JURY.

We copy the following also, at length, from the *Union Signal*, because it foreshadows so well the "good time coming." Our readers will remember that I mentioned taking the babies to meeting in the Grand Traverse region in Michigan.

WHO WILL TAKE CARE OF THE BABY?

Mrs. Sena Hartzell, National Organizer and Lecturer

Once upon a time the question was asked with bated breath, "Who'll take care of the baby when the mother goes to vote?" That question has been answered and exemplified. If no other plan offers, she takes it to the polls with her. Now the question is, What would the mother of an infant do if she were called upon to serve on a jury? At Mitchell, Oregon, a village sixty miles from a railroad, nestling in a beautiful valley, surrounded by towering peaks, where is located a thriving W. C. T. U., the question was admirably answered.

Mitchell is located in what is known as dry territory. A certain man was suspected of illicit liquor-selling. He was arrested, tried before a jury of men, and found guiltless. Again he was arrested, and tried before a jury of men. After deliberating all night they failed to agree, and were dismissed at six.

A VERDICT IN TEN MINUTES.

The judge, now grown desperate, impaneled a jury of women. This jury heard the same evidence, from the same witnesses, before the same judge, with the same county attorney. They were out less than ten minutes when they brought in a verdict of guilty. Two of these women jurors had with them their babies. One took her baby into the box with her. The other, having three children, left the younger ones in the care of the eldest child, who was a girl, and able to look after the baby while her mother sat upon the jury.

As one woman said, "All she had to do was to sit there and behave herself just as though she was in meeting!" Two of these women jurors were mothers of men who served on the jury that could not find sufficient evidence to convict. I had the honor of being entertained at the home of the forewoman, Mrs. E. M. Campbell, an intelligent, well-rounded woman of seventy years. She said, "I never had an easier job. When we entered the room, I said, 'What do you say: is he guilty or not guilty?' and every woman answered, 'He is guilty.'"

THE MOJAVE DESERT "GONE DRY."

As a further evidence that God's kingdom is coming on earth as it is in heaven, we clip the following from the *Union Signal*:

For the first time in its history, Mojave Desert district, California, has gone dry, and all saloon licenses have been revoked.

After a hard-fought battle Pinellas County, Florida, has again outlawed the saloons.

On July 4 the Iowa daylight saloon bill went into effect. Saloons are closed now from 9 P.M. to 7 A.M.

Owing to a new law in Oregon regulating intrastate liquor shipments the Mount Hood Railroad Company has refused to carry shipments of liquor to Hood River Valley districts.

As a result of the Allison law passed by the recent Texas legislature, and in effect since July 1, dry sections of the State will be protected from shipments of liquor from any point in the State. Violations of this law are punishable with imprisonment.

Under the new South Dakota State law which went into effect July 1, limiting the number of saloons to one for each 600 population, Aberdeen reports that thirty-four saloonkeepers were unable to secure renewals of their licenses.

Under the recent liquor laws of Wisconsin, licenses for the sale of intoxicants on boats can not be granted. In discussing the question Attorney General Owen said: "I believe that a license can be granted only for a building that is stationary, and that a license can no more be granted to a boat on a lake than to a wagon that is movable."—*Union Signal*.

THE LIQUOR BUSINESS GOING OUT OF OUR CIVILIZATION.

We clip the following from the *Union Signal*. Read it, and see what you think of it; then see if the concluding sentence hits you anywhere. May God be praised that prohibition has not only struck our railroads and great manufacturing establishments, but that it has taken root, as indicat-

ed in the above, in the hearts of the newspaper advertising men of America.

A significant feature of the recent annual convention of the Associated Advertising Clubs of America, held in Baltimore, was their failure to patronize to any extent the saloons of the city. While it is not unusual during meetings of big social orders for the saloons to keep open all night, they were during this great convention not at all overworked during their regular hours; and, according to a writer in the *Christian Endeavor World*, so marked was the abstinence of the delegates that they were referred to as the "men white ribboners"—"another indication among the many," remarks that paper, "that the liquor business is going out of our civilization." This state of affairs was quite in keeping with the dignified character of the convention as a whole, the first business session being opened by prayer, and members of the convention filling various pulpits on the opening day, Sunday. The adoption of the word "Truth" as the motto of the association speaks well for the ethical standards of the periodicals represented. If the 2000 delegates live up to this motto it will result in the elimination of all liquor and other objectionable advertising from the pages of their papers. Every day brings news of additions to the list of periodicals whose editors and publishers will not soil their pages with advertisements of things that are injurious to their subscribers. The number would multiply with much greater rapidity if the men and women who read would hold up the hands of such publishers, and refuse to give their patronage to those who still maintain a partnership with the liquor interests in advertising their wares.

"BREATHES THERE A MAN WITH SOUL SO DEAD?" ETC.

I have had considerable to say (and, I hope, by way of encouragement) concerning the boys' corn-growing club. It has been estimated that the boys have not only taught their fathers how to grow far better crops than they ever did before, but I have somewhere seen it stated that the result of these corn-growing contests had brought millions of dollars into the State of Iowa. Now read the following which I clip from the *Cleveland Plain Dealer*:

Gov. Cox related one incident to the farmers at the recent meeting at Chardon. One chap, who had entered the contest last winter, wrote to Secretary Sandles saying he would be compelled to drop out and lose his chance, because his father had refused to allow him the use of an acre of ground or the time to prepare the land and cultivate the crop. Gov. Cox expressed astonishment that even one farmer in Ohio should be so short-sighted and penny-wise.

What was it we used to have in our readers?

Breathes there a man with soul so dead
Who never to himself hath said—

suppose we end it by saying, "My boys are not only of more importance than any crop on my farm, but of more value than the farm itself or any thing else in this world;" and yet here is one farmer in Ohio who would not give his boy an acre of ground and time enough to try his hand in growing a crop of corn under the instruction of an expert, even when it is free of charge and paid for by the State of Ohio.